PSTA HVAC Control Review, Assessment and Recommendations

HE #15-027

January 12, 2016

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Table of Contents

PSTA HVAC Control Review, Assessment and Recommendations

Summary

Hahn Engineering, Inc. has recently completed a review and assessment of the HVAC Control System for the Pinellas Suncoast Transit Authority Facility located at 3201 Scherer Drive, St. Petersburg, Florida. The purpose of this assessment was to:

1. Review the current operation of the HVAC System.

2. Gather information as to the items that are not being controlled properly, either within the current system configuration or due to damage.

3. Provide a base of data to be utilized to compare against final project completion to ensure any trouble areas have been addressed appropriately.

4. Determine the parameters for a control system remediation to be included in a RFP.

What we found was a control system that was non-functional and, in many cases, left in manual override. The current HVAC System is very complex and unable to function in a manner to achieve the desired intended space temperature and humidity requirements.

The main components of the HVAC System are Multi Zone chilled water air handling units that have been outfitted with a Variable Frequency Drive fans and serve Variable Air Volume boxes in the room spaces. These units also contain Energy Recovery Ventilators to precondition the outside ventilation air. A Multi Zone system or a Variable Air Volume System individually are excellent ways to control space temperature. However, when combined you run into an extremely difficult control situation even if all the controls are operating correctly and it is well maintained, and the system's set points and schedules have been fully vetted. A Multi Zone system is intended to be a constant air volume system that mixes air from either a hot deck or cold deck to control space temperature. A Variable Air Volume system varies airflow to the space to control the temperature. The mixture of these two base systems together does not function well.

The facility has extreme air pressure issues. These can be directly tied to the Energy Recovery Ventilator operation or lack thereof. The purpose of an Energy Recovery Ventilator is to take the exhaust airflow from the building, run it through an energy wheel and pretreat outside ventilation air into the building. However, in many of the cases this equipment was off, tagged off and in need of significant repair. With this equipment nonoperational you cannot provide the correct ventilation air to the facility and are either significantly over pressurizing or under pressurizing the building (which currently occurs).

Attached to this report is equipment test data and summary spreadsheets identifying the equipment; whether it was operational, what the set points (if any) are and if it is in manual

override. If you review this data in detail you can see that the HVAC Control System is non-reliable/nonfunctional.

However, this system can be repaired and made into a well performing/functioning HVAC system. Many of the components such as ductwork, grilles and VAV boxes, are in usable shape, as are the coils and the fans in the air handling units. If you properly address the system with significant control modifications and some adjustments to the HVAC system you can achieve a premium operating HVAC system.

Our recommendation is to eliminate the Multi Zone function of the air handling units and make each a true VAV type air handling unit system. In addition, due to all the issues with the maintenance and the lack of operation with the Energy Recovery Ventilators we propose that those be eliminated and chilled water coils be provided in place of those systems. In addition, due to the confusing nature of the base control system and the way the original HVAC program was set up, as well as the seemingly lack of scheduling and significant overrides throughout the system, we recommend that a new backbone control system be installed with new software and new programming. Many of the existing control panels, temperature sensors, valve controls, chiller controls and VAV box controls may be reutilized with this new system.

Specifically, we recommend the approach of the following to properly address the HVAC System and its control:

1. Close/lock off the hot deck of the Multi Zone units and force all of the air through the cold deck of the unit. This will make it a single path airflow unit.

2. Provide static pressure sensors in each of the supply zoned duct systems that would operate so that the worse case static pressure would be maintained in the high pressure duct part of the system. This will allow VAV boxes to receive adequate air and allow them to function.

3. Remove the Energy Recovery Ventilators from each air handling unit. Tie the exhaust ductwork directly to the system exhaust fans.

4. Provide a chilled water outside air coil in the outside air ventilation duct to the units.

5. Provide an OA modulating damper in the outside ventilation air with Demand Control Ventilation utilizing CO^2 sensors. This will ensure adequate ventilation air, building pressures maintained and save energy.

6. Provide a new backbone control system with software that allows scheduling and monitoring of the HVAC system. This will be tied into many of the existing functioning VAV box components, temperature sensors, etc.

7. When changing the chillers, reinstall them in a configuration of a parallel operation in lieu of a series configuration. This will allow the chiller to operate on a parallel path and reduce the overall pumping pressure and save energy.

8. Provide a complete Test and Balance of the system.

We remain confident that the HVAC Control System remediation, as well as the minor HVAC system fixes, along with the chiller change out portion of the project can successfully be completed within the RFP process and within the original budget as estimated.

Our recommendation moving forward is to begin preparing the required documents outlining the control system remediation requirements, the HVAC system remediation requirements, and the chiller change out requirements so that the RFP can be fully developed and put out for contractor proposals.

Appendix 1

AHU-2A Zone clampers

- 21 - tested / will operate
- 22 - tested ✓
- 23 - initial test failed – no movement / No power indicated (LED)
- 24 - tested ✓
- ~~2~~ 25 - tested ✓

AHU-2A - VFD is in hand set to 45Hz
- Max cfm @ VAV boxes are not achievable.
- Elec. ht will not engage until min Heating cfm is met.
- Retest boxes for heating / max cfm

Z1 – 64.1 | 56.
Z2 – 50.7 | 53.0
Z3 – 46.4 | 46.
Z4 – 54.2 | 49.
Z5 – 67.4 | 66.
Z6 – 42.5 | 42.

AHU-3A test.

- MZ dampers verified to be in good condition.
- newer belimo actuators installed
- Z6 set to 100% – data room. [41.9°F O/A temp]
- VFD S.P. = 1.0 " w.c.
- 41.7 cool deck temp. / MA tem = 90.5° – ? not likely
- 247 cfm OA?
- EF-3A on, VFD@ 100% – run → setpoint on 0.03"

— AHU-3A –

VFD modulates up. – S.P ↑ to 1.5"
– ramps up to ~ 77% – 46.5Hz
– s.P. ↓ to 1.0 "
– ramps down ~ 68.3% 41.0Hz

? V3-13A V3-17A ?

AHU-3A shutdown

– AHU- fan turns off
– EF - still run
– ERV – stays running.

* shut down through controls
* shut down w/ disconnect

EF-2A – 46.3A – slow / no airflow ?

~~141.5?~~

AHU-1M 12/22/2015 10:00 AM

- M/A temp = 1147.5? OA temp = 789.7°F ?
- ✱ EF-3A – off ? CHWS = 48.0
- AHU cmd - off ? CHWR = 52.0
- VFD @ 91% — 2.5" w.c. setpoint is met ✱
- ✱ No OA temp?

Zone dampers

Z1 - 59.5/60 - 82% ✓ " 64.4

Z2 - 59.1/59 - 88% ✓ " 72.2

Z3 - 50.8/80 - 100% / ↓ to 25% - temp begins to rise – damper moves! 60.0

VFD for AHU-Fan

↓ S.P to 1.5" — VFD mods down to - 80.53%

↑ S.P. to 3.0" — VFD mods to — 93.5%

EF-3A ✓ on through magn.

└ mislabeled. EF-32M?

F2 (457)

1/6/2016 8:43AM OA = 57°F

AHU-2M

- VFD set in hand @ 60Hz [59.5 Hz - 2.28" w.c.]
- ERV turned off & disconnect.
- command is on - S.P setpoint = 1.5"
- M/A temp = 68.2°F
- Zone 5, 6 & 7 show 0% cold deck damper position
  ↳ setpoints are not ind. in DDC to 100%!
  → schedules not indicated!
  - NO VAV 2-30 on DDC controls.

NO RA or OA damper moves w/adj in DDC

Z1 = 60.2
Z2 = 65.5
Z3 = 60.6
Z4 = 60.1
Z5 = ~~60.0~~ 59.7
Z6 = 57.0
Z7 = 56.7
Z8 = 60.5

AHU-4M /5M & 6M are not adjustable through DDC.
- AHU-4M only shows fan status!
- no setpoints or status shown in DDC for 5M or 6M]

Boilers command / is off / Pump 5 is on but no HW!
boiler is firing. P6M VFD failed / in bypass mod/off

EF-32M locked off at MCC / noise issue.

ERU-2M — ERV wheel does not turn w/ power on
- EF & ~~RF~~ OA fan on - OA fan belt is noisy.
- fan status appears in DDC.

AHU-3M Variable air Volume / Constant temp.

SA & RA fan on VFD

Temps

RA = 68.3

OA = 64.9

MA = 67.6

DA = 59.1

AHU Fan S.P. = 1.8" wc.

Stp = 1.8" wc

CHW Valve = 100%

HW Valve = 0%

DA Stp = 45.0°

Appendix 2

HVAC EQUIPMENT LIST

Administration Building VAV Boxes
Variable Air Volume Terminal Units

Mark	Thermostat Location	Room #	Manufacturer	Model No.	Serial No.	Airflow Setpoints (CFM)			Occ Temp Stpt (°F)	
						Max.	Min.	Htg.	Htg.	Cool
VAV-1A-1	Conf. Rm.	A149	Trane	VCEF10000G0FM00C00000L5W0F0552100	R04H04768A	100	55	150	64	76
VAV-1A-2	Board Area	A148	Trane	VCEF08000G0FM00C00000L4W0D0402100	R04H04772A	800	10	200	60	71
VAV-1A-3	Audience	A147	Trane	VCEF08000G0FM00C00000L4W0D0102100	R04H04775A	700	10	100	60	71
VAV-1A-4	Audience	A147	Trane	VCEF08000G0FM00C00000L4W0D0102100	----	1000	10	350	60	74
VAV-1A-5	Vendor Bid	A144	Trane	VCEF08000G0FM00C00000L4W0D0102100	R04H04785A	320	50	250	67	74
VAV-1A-6	Elec. Rm.	A145	Trane	VCCF06000G0FM00C00000L4W000000000	R04H04788A	600	106	----	----	74
VAV-1A-7	Mech. Rm.	A146	Trane	VCEF06000G0FM00C00000L4W0D0102100	R04H04792A	165	30	70	64	74
VAV-1A-8	Archives	A243	Trane	VCEF10000G0FM00C00000L5W0D0102100	----	1500	200	900	67	74
VAV-1A-9	Classroom	A244	Trane	VCEF08000G0FM00C00000L4W0D0252100	R04H04783A	300	100	180	65	74
VAV-1A-10	Auditorium	A245	Trane	VCEF08000G0FM00C00000L4W0D0402100	R04H04770A	1000	200	375	67	74
VAV-1A-11	Auditorium	A245	Trane	VCEF08000G0FM00C00000L4W0D0402100	R04H04771A	1000	300	375	67	74
VAV-2A-1	Exec. Dir.	A127	Trane	VCEF08000G0FM00C00000L4W0D0302100	R04H04777A	550	200	150	70	74
VAV-2A-2	Exec. Assist.	A125	Trane	VCCF06000G0FM00C00000_____100	----	250	100	100	76	80
VAV-2A-3	Lunch Rm.	A123	Trane	VCEF10000G0FM00C00000L5W0F0552100	R04H04769A	2250	200	800	66	73
VAV-2A-4	Wm. Rr.	A129	Trane	VCEF08000G0FM00C00000L4W0D0252100	R04H04784A	100	50	175	68	78
VAV-2A-5	Sr. Tr. Plan.	A105	Trane	VCEF06000G0FM00C00000L4W0D0402100	R04H04810A	370	150	225	66	68
VAV-2A-6	Dir. Plan.	A101	Trane	VCEF05000G0FM00C00000L4W0D0252100	R04H04812A	550	450	250	66	72
VAV-2A-7	Conf. Rm.	A102	Trane	VCEF06000G0FM00C00000L4W0D0252100	R04H04814A	494	205	210	65	72
VAV-2A-8	Mech. Rm.	A122	Trane	VCEF06000G0FM00C00000L4W0D0102100	R04H04793A	119	20	75	66	74
VAV-2A-9	Open Off. 1	A104	Trane	VCCF08000G0FM00C00000L4W000000000	R04H04818A	1000	10	----	----	74
VAV-2A-10	Cust. Serv.	A110	Trane	VCCF04000G0FM00C00000L4W000000000	R04H04823A	500	225	----	----	74
VAV-2A-11	Lead Supv.	A111	Trane	VCEF05000G0FM00C00000L4W0D0102100	R04H04830A	155	35	100	67	76
VAV-2A-12	Dir. Mktg.	A112	Trane	VCEF06000G0FM00C00000L4W0D0202100	R04H04834A	225	50	178	66	74
VAV-2A-13	Conf. Rm.	A113	Trane	VCEF06000G0FM00C00000L4W0D0152100	R04H04802A	300	50	155	66	74
VAV-2A-14	Pr & Graph.	A115	Trane	VCEF06000G0FM00C00000L4W0D0252100	----	500	125	210	66	74
VAV-2A-15	Emp. Ben.	A138	Trane	VCCF04000G0FM00C00000L4W000000000	R04H04824A	100	50	----	----	----
VAV-2A-16	Copy/Work	A117	Trane	VCCF04000G0FM00C00000L4W000000000	R04H04825A	500	25	----	----	74
VAV-2A-17	Open Off. 2	A118	Trane	VCCF08000G0FM00C00000L4W000000000	R04H04816A	300	214	----	----	74
VAV-2A-18	Corr. #1	A119	Trane	----	----	398	248	0	66	74
VAV-2A-19	Hr. Dir.	A139	Trane	VCEF08000G0FM00C00000L4W0D0102100	R04H04778A	600	250	214	66	70
VAV-2A-20	Open Off. 3	A137	Trane	VCCF05000G0FM00C00000L4W000000000	R04H04844A	270	25	----	----	74
VAV-2A-21	Waiting	A135	Trane	VCCF05000G0FM00C00000L4W000000000	R04H04848A	300	15	----	----	71
VAV-2A-22	Clerk/Mail	A132	Trane	VCCF04000G0FM00C00000L4W000000000	R04H04826A	180	0	----	----	----
VAV-2A-23	Corr. #6	A242	Trane	VCEF12000G0FM00C00000L5W0F1202100	R04H04849A	1500	600	1050	66	74
VAV-2A-24	Ceiling Plen.	A242	Trane	VCEF16000G0FM00C00000L5W0F1402100	R04H04850A	1000	600	300	66	74
VAV-2A-25	Comm.	A120	Trane	VCCF08000G0FM00C00000L4W000000000	R04H04817A	200	50	----	----	----
VAV-2A-26	Stair 2	A109	Trane	VCEF08000G0FM00C00000L4W0D0402100	R04H04773A	400	135	120	66	73

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Mark	Thermostat Location	Room #	Manufacturer	Model No.	Serial No.	Airflow Setpoints (CFM)			Occ Temp Stpt (°F)	
						Max.	Min.	Htg.	Htg.	Cool
VAV-3A-1	Risk Man.	A207	Trane	VCEF06000G0FM00C00000L4W0D0252100	R04H04815A	200	100	180	70	72
VAV-3A-2	Dir. Fin.	A201	Trane	VCEF06000G0FM00C00000L4W0D0202100	R04H04838A	500	200	200	68	71
VAV-3A-3	Conf. Rm.	A202	Trane	VCEF08000G0FM00C00000L4W0D0202100	R04H04852A	350	150	150	66	76
VAV-3A-4	Open Off.	A208	Trane	VCCF08000G0FM00C00000L4W0000000000	R04H04822A	400	150	----	----	72
VAV-3A-5	Mech. Rm.	A224	Trane	VCCF04000G0FM00C00000L4W0000000000	R04H04828A	100	45	100	73	74
VAV-3A-6	Print Rm.	A211	Trane	VCCF04000G0FM00C00000L4W0000000000	R04H04829A	161	50	----	----	76
VAV-3A-7	Audit Off.	A212	Trane	VCEF06000G0FM00C00000L4W0D0102100	R04H04800A	170	30	121	68	72
VAV-3A-8	Controller	A213	Trane	VCEF06000G0FM00C00000L4W0D0202100	R04H04840A	250	100	110	65	72
VAV-3A-9	Sen. Accnt.	A215	Trane	VCEF06000G0FM00C00000L4W0D0202100	R04H04841A	150	50	50	78	80
VAV-3A-10	Sen. Accnt.	A217	Trane	VCEF06000G0FM00C00000L4W0D0202100	R04H04798A	750	30	1500	65	72
VAV-3A-11	Copy Rm.	A219	Trane	VCCF04000G0FM00C00000L4W0000000000	R04H04827A	214	50	----	----	76
VAV-3A-12	Open Off. 5	A220	Trane	VCCF08000G0FM00C00000L4W0000000000	R04H04820A	650	200	----	----	76
VAV-3A-13	Not Used									
VAV-3A-14	Set-Up Fac.	A238	Trane	VCCF08000G0FM00C00000L4W0000000000	R04H04821A	300	225	----	----	72
VAV-3A-15	System Man.	A235	Trane	VCEF06000G0FM00C00000L4W0D0102100	R04H04799A	285	40	120	72	76
VAV-3A-16	System Ana.	A233	Trane	VCEF06000G0FM00C00000L4W0D0202100	R04H04837A	350	106	180	72	74
VAV-3A-17	Not Used									
VAV-3A-18	Server Rm.	A236	Trane	VCCF10000G0FM00C00000L4W0000000000	R04H04855A	850	400	----	----	72
VAV-3A-19	Server Rm.	A236	Trane	VCCF10000G0FM00C00000L4W0000000000	R04H04856A	1300	700	----	----	70
VAV-3A-20	Purch. Man.	A240	Trane	VCEF06000G0FM00C00000L4W0D0152100	R04H04808A	450	200	150	70	75
VAV-3A-21	Open Off. 6	A241	Trane	VCEF06000G0FM00C00000L4W0D0152100	R04H04809A	250	100	100	74	78
VAV-3A-22	Open Off. 6	A241	Trane	VCCF05000G0FM00C00000L4W0000000000	R04H04847A	1000	500	----	----	32
VAV-3A-23	Res. Cent.	A239	Trane	VCCF06000G0FM00C00000L4W0000000000	R04H04791A	449	150	----	----	76
VAV-3A-24	Elec. Rm.	A223	Trane	VCCF05000G0FM00C00000L4W0000000000	R04H04848A	350	350	----	----	72
VAV-3A-25	Mens Rm.	A228	Trane	VCEF06000G0FM00C00000L4W0D0202100	R04H04839A	350	350	200	68	72
VAV-3A-26	Lunch Rm.	A225	Trane	VCEF10000G0FM00C00000L4W0D0402100	R04H04859A	1040	200	400	71	76
VAV-3A-27	Lunch Rm.	A225	Trane	VCEF10000G0FM00C00000L4W0D0402100	R04H04860A	990	470	400	71	75
Maintenance Building VAV Boxes										
Variable Air Volume Terminal Units										
VAV-1M-1	Dir. Maint.	M150	Trane	VCEF05000G0FM00C00000L4W0D0252100	R04H04811A	328	170	218	71	71
VAV-1M-2	Maint. Supt.	M152	Trane	VCEF08000G0FM00C00000L4W0D0302100	R04H04776A	250	170	170	71	74
VAV-1M-3	Open Office	M154	Trane	VCCF05000G0FM00C00000L4W0000000000	R04H04842A	299	50	----	----	70
VAV-1M-4	Vest #1	M157	Trane	VCEF10000G0FM00C00000L5W0F0652100	R04H04861A	690	210	300	71	74
VAV-1M-5	Stair #1	M247	Trane	VCEF10000G0FM00C00000L5W0F1102100	R04H04862A	1229	500	850	71	74
VAV-1M-6	Conf. Rm.	M151	Trane	VCEF04000G0FM00C00000L4W0D0102100	R04H04863A	150	50	150	71	74
VAV-1M-7	Women Locker	M148	Trane	VCEF05000G0FM00C00000L4W0D0152100	R04H048--A	300	400	301	71	74
VAV-1M-8	Men Locker	M144	Trane	----	----	500	400	----	----	74
VAV-1M-9	Lunch Rm.	M139	Trane	VCEF10000G0FM00C00000L4W0D0202100	R04H04869A	975	250	270	68	71
VAV-1M-10	Lunch Rm.	M139	Trane	VCEF10000G0FM00C00000L4W0D0202100	R04H04868A	500	125	150	71	74

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						Max.	Min.	Htg.	Htg.	Cool
VAV-1M-11	Data Entry Clerk	M127	Trane	----	----	300	50	50	65	74
VAV-1M-12	Elect. #1	M142	Trane	----	----	468	104	104	71	74
VAV-2M-1	Dir. Trans.	M202	Trane	VCEF06000G0FM00C00000L4W0D0152100	R04H04804A	300	89	250	65	68
VAV-2M-2	Transit Analyst	M205	Trane	VCEF08000G0FM00C00000L4W0D0402100	R04H04871A	600	220	265	72	74
VAV-2M-3	Break Rm.	M206	Trane	VCEF08000G0FM00C00000L4W0D0352100	R04H04874A	350	100	225	71	74
VAV-2M-4	Men Rm.	M209	Trane	VCEF06000G0FM00C00000L4W0D0152100	R04H04806A	100	50	0	65	71
VAV-2M-5	Daily Schedule	M211	Trane	VCEF06000G0FM00C00000L4W0D0202100	R04H04836A	100	50	200	75	78
VAV-2M-6	Trans. Mgr.	M212	Trane	VCEF06000G0FM00C00000L4W0D0152100	R04H04807A	400	144	148	70	74
VAV-2M-7	Dispatch	M213	Trane	VCEF08000G0FM00C00000L4W0D0302100	R04H04781A	200	100	200	68	75
VAV-2M-8	Dispatch	M213	Trane	VCEF12000G0FM00C00000L4W0D0302100	R04H04874A	350	100	200	68	73
VAV-2M-9	Lead Supervisor	M214	Trane	VCEF06000G0FM00C00000L4W0D0102100	R04H04797A	410	200	120	65	72
VAV-2M-10	Radio Dispatch	M215	Trane	----	----	330	100	100	68	73
VAV-2M-11	Road Supervisor	M217	Trane	VCEF06000G0FM00C00000L4W0D0102100	R04H04794A	75	25	100	78	85
VAV-2M-12	Comp. Bid Rm.	M232	Trane	VCEF05000G0FM00C00000L4W0D0152100	R04H04866A	301	265	248	70	74
VAV-2M-13	Consultation	M219	Trane	VCEF05000G0FM00C00000L4W0D0102100	R04H04831A	----	----	----	----	----
VAV-2M-14	Open Office #1	M221	Trane	VCCF08000G0FM00C00000L4W0000000000	R04H04819A	799	218	----	----	74
VAV-2M-15	Reference Center	M222	Trane	VCEF06000G0FM00C00000L4W0D0152100	R04H04805A	200	100	148	71	75
VAV-2M-16	Conference Rm.	M224	Trane	VCEF06000G0FM00C00000L4W0D0202100	R04H04835A	300	200	218	64	68
VAV-2M-17	Copy/Work Rm.	M225	Trane	----	----	394	155	----	----	74
VAV-2M-18	Demonstration Rm.	M229	Trane	VCEF08000G0FM00C00000L4W0D0302100	R04H04779A	828	695	350	71	74
VAV-2M-19	Class Rm. #1	M230	Trane	VCEF08000G0FM00C00000L4W0D0202100	R04H04851A	538	370	300	71	74
VAV-2M-20	Quiet Rm.	M231	Trane	VCEF04000G0FM00C00000L4W0D0102100	R04H04864A	330	150	100	69	74
VAV-2M-21	Drivers Rm.	M233	Trane	VCEF08000G0FM00C00000L4W0D0152100	R04H04787A	650	125	0	68	72
VAV-2M-22	Drivers Rm.	M233	Trane	VCEF10000G0FM00C00000L4W0D0452100	----	450	299	299	71	74
VAV-2M-23	Drivers Rm.	M233	Trane	VCEF10000G0FM00C00000L4W0D0202100	R04H04870A	1500	500	800	68	72
VAV-2M-24	Check In	M235	Trane	VCEF08000G0FM00C00000L4W0D0352100	R04H04872A	400	165	280	71	74
VAV-2M-25	Lockers	M237	Trane	VCEF06000G0FM00C00000L4W0D0352100	R04H04876A	69429	0	----	----	74
VAV-2M-26	Women Rm.	M240	Trane	VCEF05000G0FM00C00000L4W0D0102100	R04H04832A	75	50	----	----	74
VAV-2M-27	Union Office	M241	Trane	VCEF06000G0FM00C00000L4W0D0102100	R04H04796A	119	44	123	71	72
VAV-2M-28	Mens Rm.	M238	Trane	VCEF05000G0FM00C00000L4W0D0202100	R04H04827A	398	273	----	----	74
VAV-2M-29	Wellness Center	M224	Trane	VCEF14000G0FM00C00000L5W0F0652100	R04H04878A	998	220	449	65	68
VAV-2M-30	Not Used									
VAV-2M-31	Service Area	M255	Trane	VCCF06000G0FM00C00000L4W0D0252100	R04H04790A	140	140	----	----	74
VAV-2M-32	Vending Kitchen	M252	Trane	VCEF08000G0FM00C00000L4W0D0352100	R04H04873A	410	165	269	71	74
VAV-2M-33	IT Rm.	M254	Trane	VCCF10000G0FM00C00000L4W0000000000	R04H04853A	1365	200	----	----	74
VAV-2M-34	Elect. Rm. #4	M253	Trane	VCCF05000G0FM00C00000L4W00000000	R04H04845A	500	100	----	----	74
VAV-2M-35	Vest. #2	M129	Trane	----	----	----	----	----	----	----
VAV-2M-36	Corr. #16	M246	Trane	VCEF08000G0FM00C00000L4W0D0302100	R04H04780A	----	----	----	----	----
VAV-2M-37	Cond. Storage	M235	Trane	----	----	----	----	----	----	----
VAV-2M-38	Main Elect. Rm.	M133	Trane	----	----	750	500	----	----	70

HVAC EQUIPMENT LIST

Mark	Thermostat Location	Room #	Manufacturer	Model No.	Serial No.	Airflow Setpoints (CFM)			Occ Temp Stpt (°F)	
						Max.	Min.	Htg.	Htg.	Cool
VAV-3M-1	Comp. Rebuild	M159	Trane	VCCF10000G0FM00C00000L4W000000000	R04H04857A	924	200	0	69	68
VAV-3M-2	Comp. Rebuild	M159	Trane	VCCF10000G0FM00C00000L4W000000000	R04H04858A	----	----	----	----	----
VAV-3M-3	Electrical Shop	M158	Trane	VCWF06000G0FM00C00002L4W00000000	R04H04881A	650	500	----	----	----
VAV-3M-4	Mach. Shop	M160	Trane	VCWF08000G0FM00C00002L4W00000000	R04H04882A	----	----	----	----	----
VAV-3M-5	Staging	M162	Trane	VCWF10000G0FM00C00002L4W00000000	R04H04883A	998	148	----	----	68
VAV-4M-1	Corridor	M185		DAMPER ONLY	----	64	64	----	----	64
VAV-4M-2	Training Room	M187		DAMPER ONLY	----	66	66	----	----	66
VAV-4M-3	Electrical	M180		DAMPER ONLY	----	66	66	----	----	66
VAV-4M-4	Custodian	M182		DAMPER ONLY	----	----	----	----	----	----
VAV-4M-5	Body Office	M184		DAMPER ONLY	----	64	64	----	----	64
VAV-4M-6	Training Office	M186		DAMPER ONLY	----	67	67	----	----	67
VAV-4M-7	Training Storage	M188		DAMPER ONLY	----	0	0	----	----	0
VAV-4M-8	Telcom Rm #2	M249A		DAMPER ONLY	----	----	----	----	----	----
VAV-4M-9	Mech. Eqpt. Platform #2	M249		DAMPER ONLY	----	----	----	----	----	----

Administration Building Air Handling Units

Mark	Unit Location	Room #	Manufacturer	Model No.	Serial No.
AHU-1A	Mechanical Room	A146	Trane/Thybar	TIBA015H43320FA	M03M00286
AHU-2A	Mechanical Room	A122	Trane/Thybar	TIBA025H41720FA	M03M00287
AHU-3A	Mechanical Room	A224	Trane/Thybar	TIBA025H41720FA	M03M00288
AHU-4A	Vendor Bid Room	A144	Trane	BHC024A2A0A1M01E000000B01000000000000	T04J56751
FCU-1A	Corridor	A119	Trane		

Maintenance Building Air Handling Units

Mark	Unit Location	Room #	Manufacturer	Model No.	Serial No.
AHU-1M	Mechanical Room	M143	Trane/Thybar	TIBA015H41720FA	M03M00289
AHU-2M	Mechanical Room	M255	Trane	TIBA047H41720F0	M03M00290
ERU-2M	Mechanical Room	M255	Thybar	TV6475	C004-7592-1
RF-2M	Mechanical Room	M255	Greenheck	BSQ-420-100-X	4102215
AHU-3M	Mechanical Room	M248	Trane	MCCB010UA0A0UA	K04D61819
AHU-4M	Mech. Eqpt. Platform #2	M249	Trane	MCCB008UA0A0UB	K04D6840
AHU-5M	Schedule Storage	M136	Trane	FC024	----
AHU-6M	Component Rebuild	M159	Trane	FC024	----
FCU-1M	Mech. Eqpt. Platform #1	M201	Trane	BCHB 036	----
FCU-2M	Office	M192	Trane	BCHB 018	----

Appendix 3

HVAC EQUIPMENT TEST LOG

Administration Building VAV Boxes
Variable Air Volume Terminal Units

Mark	Clg Test Success (Y/N)	Htg Test Success (Y/N)	Test Notes
VAV-1A-1	Y	Y	Damper and electric heater are controlled at BAS.
VAV-1A-2	Y	N	Damper controlled but at 100% does not achieve max airflow. Htg shown on at BAS but no temp rise detected in DA.
VAV-1A-3	Y	Y	Damper and electric heater are controlled at BAS.
VAV-1A-4	Y	Y	Damper and electric heater are controlled at BAS.
VAV-1A-5	Y	Y	Damper and electric heater are controlled at BAS. Damper at 100 % does not achieve max airflow.
VAV-1A-6	N	N	VAV Controller disabled. Not working.
VAV-1A-7	Y	Y	Damper and electric heater are controlled at BAS.
VAV-1A-8	Y	----	Damper controlled but at 100% does not achieve max airflow.
VAV-1A-9	Y	Y	Damper and electric heater are controlled at BAS.
VAV-1A-10	Y	Y	Damper and electric heater are controlled at BAS. Damper at 100 % does not achieve max airflow.
VAV-1A-11	Y	Y	Damper and electric heater are controlled at BAS. Damper at 100 % does not achieve max airflow.
VAV-2A-1	N	N	Box not controlled . Setpoint changes not enabled.
VAV-2A-2	N	Y	Setpoint changes do not effect airflow or damper position.
VAV-2A-3	N	N	BAS list "0" cfm as setpoint. No adjustable setpoints available.
VAV-2A-4	Y	Y	Heat reacts very slow.
VAV-2A-5	Y	N	Damper controlled but at 100% does not achieve max airflow. Htg shown on at BAS but unable to test due to low airflow.
VAV-2A-6	Y	N	Damper controlled but at 100% does not achieve max airflow. Htg shown on at BAS but unable to test due to low airflow.
VAV-2A-7	Y	N	Damper controlled but at 100% does not achieve max airflow. Htg shown on at BAS but unable to test due to low airflow.
VAV-2A-8	Y	N	Damper controlled airflow not displayed at BAS. Htg shown on at BAS but unable to test due to low airflow.
VAV-2A-9	N	----	Damper position or cfm not displayed at BAS.
VAV-2A-10	N	N	Box not controlled . Setpoint changes not enabled.
VAV-2A-11	Y	N	Damper controlled but at 100% does not achieve max airflow. Htg shown on at BAS but unable to test due to low airflow.
VAV-2A-12	Y	N	Damper controlled but at 100% does not achieve max airflow. Htg shown on at BAS but unable to test due to low airflow.
VAV-2A-13	Y	N	Damper controlled but at 100% does not achieve max airflow. Htg shown on at BAS but unable to test due to low airflow.
VAV-2A-14	Y	N	Damper controlled but at 100% does not achieve max airflow. Htg shown on at BAS but unable to test due to low airflow.
VAV-2A-15	N	N	Box Setpoint changes not enabled. No control.
VAV-2A-16	N	----	Airflow does not change with damper position.
VAV-2A-17	Y	----	Damper controlled at BAS and achieves cfm setpoint.
VAV-2A-18	Y	----	Damper controlled at BAS and achieves cfm setpoint.
VAV-2A-19	Y	Y	Damper controlled but at 100% does not achieve max airflow.
VAV-2A-20	Y	----	Damper controlled but at 100% does not achieve max airflow.
VAV-2A-21	Y	----	Damper controlled but at 100% does not achieve max airflow.
VAV-2A-22	N	N	Box not controlled . Set to 0 cfm. No setpoint adjustments available.
VAV-2A-23	Y	Y	Damper controlled but at 100% does not achieve max airflow.
VAV-2A-24	Y	N	Heating test unsuccessful. Heater turns off.
VAV-2A-25	N	N	Box not controlled . Setpoint changes not enabled.
VAV-2A-26	Y	N	Damper controlled but at 100% does not achieve max airflow. Htg shown on at BAS but unable to test due to low airflow.

VAV-3A-1	Y	Y	Damper and electric heater are controlled at BAS.
VAV-3A-2	Y	Y	Damper controlled but at 100% does not achieve max airflow. Airflow setpoint does not change in BAS graphic.
VAV-3A-3	Y	Y	Damper and electric heater are controlled at BAS.
VAV-3A-4	Y	----	Damper controlled at BAS.
VAV-3A-5	N	N	Box not controlled . Setpoint changes do not initiate reaction from box.
VAV-3A-6	Y	----	Damper controlled but at 100% does not achieve max airflow. Slow reacting.
VAV-3A-7	Y	Y	Damper and Htg control very slow reacting.
VAV-3A-8	Y	Y	Damper controlled but at 100% does not achieve max airflow.
VAV-3A-9	N	N	Space temp setpoint is at 80 degrees. Damper and heater are controlled but airflow setpoints are too low.
VAV-3A-10	Y	N	Airflow setpoints are too high. Unable to achieve with damper at 100%.
VAV-3A-11	Y	----	Damper controlled but at 100% does not achieve max airflow.
VAV-3A-12	Y	----	Damper controlled but at 100% does not achieve max airflow.
VAV-3A-13	Y	----	Damper controlled but at 100% does not achieve max airflow.
VAV-3A-14	Y	----	Damper controlled but at 100% does not achieve max airflow.
VAV-3A-15	N	N	Damper does not move with setpoint changes. Heater does not stay on.
VAV-3A-16	Y	Y	Damper and electric heater are controlled at BAS.
VAV-3A-17	Y	----	Damper controlled but at 100% does not achieve max airflow.
VAV-3A-18	Y	----	Damper controlled but at 100% does not achieve max airflow.
VAV-3A-19	Y	----	Damper controlled but at 100% does not achieve max airflow.
VAV-3A-20	Y	Y	Damper controlled but at 100% does not achieve max airflow.
VAV-3A-21	Y	N	Damper controlled but at 100% does not achieve max airflow. Htg shown on at BAS but unable to test due to low airflow.
VAV-3A-22	N	N	Box not controlled . Setpoint changes not enabled.
VAV-3A-23	N	N	Box not controlled . BAS list "0" cfm as setpoint. Setpoint changes not available.
VAV-3A-24	Y	Y	Damper controlled at BAS.
VAV-3A-25	Y	Y	Damper controlled but at 100% does not achieve max airflow. Htg slow reacting temp rise.
VAV-3A-26	Y	Y	Damper controlled but at 100% does not achieve max airflow.
VAV-3A-27	Y	Y	Damper controlled but at 100% does not achieve max airflow.
Maintenance Building VAV Boxes			
Variable Air Volume Terminal Units			
VAV-1M-1	Y	Y	Damper and electric heater are controlled at BAS.
VAV-1M-2	Y	Y	Damper and electric heater are controlled at BAS.
VAV-1M-3	Y	----	Damper controlled at BAS.
VAV-1M-4	Y	Y	Damper does not adjust to heating airflow setpoint. Remains at max cfm.
VAV-1M-5	Y	Y	Damper and electric heater are controlled at BAS.
VAV-1M-6	Y	Y	Damper and electric heater are controlled at BAS.
VAV-1M-7	Y	N	Damper controlled. Electric heat shown on at BAS however not energized. No DA temp rise detected.
VAV-1M-8	Y	----	Damper controlled at BAS.
VAV-1M-9	Y	N	Htg does not remain on. No DA temp rise.
VAV-1M-10	Y	Y	Htg DA temp is low. 69.5 degrees w/ 2 stage electric heat on.
VAV-1M-11	Y	N	Damper controlled but at 100% does not achieve max airflow. Electric heat on at BAS however not energized. No DA temp rise detected.
VAV-1M-12	N	N	Setpoints not displayed at BAS. No control.
VAV-2M-1	Y	Y	Damper and electric heater are controlled at BAS.

VAV-2M-2	Y	Y	Damper controlled but at 100% does not achieve max airflow. Htg slow reacting temp rise.
VAV-2M-3	Y	Y	Damper and electric heater are controlled at BAS.
VAV-2M-4	Y	Y	Heat airflow setpoint is "0" cfm? Airflow at 81 cfm during heating operation.
VAV-2M-5	Y	N	Damper controlled at BAS. Electric heat does not initiate.
VAV-2M-6	Y	Y	Damper controlled but at 100% does not achieve max airflow. Htg shown off at BAS but DA temp rise detected.
VAV-2M-7	Y	Y	Damper and electric heater are controlled at BAS.
VAV-2M-8	Y	Y	Damper controlled. Htg shown off at BAS but DA temp rise detected.
VAV-2M-9	Y	Y	Damper controlled. Htg shown off at BAS but DA temp rise detected.
VAV-2M-10	Y	N	Electric heat does not energize.
VAV-2M-11	Y	Y	Damper controlled. Htg shown off at BAS but DA temp rise detected.
VAV-2M-12	Y	Y	Damper and electric heater are controlled at BAS.
VAV-2M-13	N	N	No access through BAS.
VAV-2M-14	N	N	No damper or temp setpoints available for adjustement in BAS.
VAV-2M-15	Y	Y	Damper controlled. Htg shown off at BAS but DA temp rise detected.
VAV-2M-16	Y	Y	Damper and electric heater are controlled at BAS.
VAV-2M-17	N	----	Discharge airflow cfm not displayed at BAS. Damper control not available.
VAV-2M-18	Y	Y	Damper controlled but at 100% does not achieve max airflow. Htg shown off at BAS but DA temp rise detected.
VAV-2M-19	Y	Y	Damper and electric heater are controlled at BAS.
VAV-2M-20	Y	N	Damper controlled. Htg does not energize.
VAV-2M-21	Y	Y	Damper controlled. Htg airflow setpoint set to "0" cfm however BAS displays 250 cfm.
VAV-2M-22	Y	Y	Damper controlled. Htg setpoints not shown to change in BAS for heating mode..
VAV-2M-23	Y	N	Damper controlled. Htg does not energize.
VAV-2M-24	N	N	Setpoints do not change with cooling or heating box mode.
VAV-2M-25	N	----	Damper set to 100% and does not change. Setpoint changes not available.
VAV-2M-26	N	----	Damper set to 100% and does not change. Setpoint changes not available.
VAV-2M-27	Y	Y	Damper and electric heater are controlled at BAS.
VAV-2M-28	N	----	Damper set to 100% and does not change. Setpoint changes not available.
VAV-2M-29	Y	Y	Damper and electric heater are controlled at BAS. Box remains at max flow during heating.
VAV-2M-31	N	----	Damper set to 71% and does not change. Setpoint changes not available.
VAV-2M-32	Y	Y	Damper and electric heater are controlled at BAS.
VAV-2M-33	N	----	Damper set to 100% and does not change. Setpoint changes not available.
VAV-2M-34	N	----	Damper set to 100% and does not change. Setpoint changes not available.
VAV-2M-35	N	N	Box not controlled. No access through BAS.
VAV-2M-36	N	N	Box not controlled. No access through BAS.
VAV-2M-37	N	N	Box not controlled. No access through BAS.
VAV-2M-38	N	----	Damper set to 91% and does not change. Setpoint changes not available.
VAV-3M-1	N	----	Damper controlled but at 100% does not achieve max airflow. Htg setpoint available at BAS but box is cooling only.
VAV-3M-2	N	N	Box not controlled. No access through BAS.
VAV-3M-3	N	----	Damper set to 100% and does not change. Setpoint changes not available.
VAV-3M-4	N	N	Box not controlled. No access through BAS.
VAV-3M-5	N	----	Damper set to 100% and does not change. Setpoint changes not available.
VAV-4M-1	N	N	Damper only box not controlled. All setpoints set without available adjustment.

VAV-4M-2	N	N	Damper only box not controlled. All setpoints set without available adjustment.
VAV-4M-3	N	N	Damper only box not controlled. All setpoints set without available adjustment.
VAV-4M-4	N	N	Not listed in BAS.
VAV-4M-5	N	N	Damper only box not controlled. All setpoints set without available adjustment.
VAV-4M-6	N	N	Damper only box not controlled. All setpoints set without available adjustment.
VAV-4M-7	N	N	Damper only box not controlled. All setpoints set without available adjustment.
VAV-4M-8	N	N	Not listed in BAS.
VAV-4M-9	N	N	Not listed in BAS.

Administration Building Air Handling Units

Mark	Test Notes
AHU-1A	VFD adjusts to S.P setpoint. Low S.P. setpoint does not allow min/htg cfm at VAV boxes. AHU Multi-Zone dampers not operable. ERV wheel is off
AHU-2A	VFD set in hand to 45Hz. Min/htg cfm unachievable by most VAV zones. S.P. sensor is not working according to staff. ERV wheel on, does not shut down with AHU. EF-2A at very low cfm.
AHU-3A	VFD adjusts to S.P setpoint. ERV wheel on, does not shut down with AHU. EF-3A on at 100%, does not shut down with AHU.
AHU-4A	Fan coil unit running at 100% open without control from BAS. Controller exists in mechanical room A146 but is not integrated with system.
FCU-1A	Not available through BAS

Maintenance Building Air Handling Units

Mark	Test Notes
AHU-1M	VFD adjusts to S.P setpoint. OA temp not displayed at BAS. EF-3A turned off at BAS.
AHU-2M	VFD initially set to hand at 60Hz. Adjusts to S.P. setpoint if placed in auto. ERV turned off at disconnect, wheel does not energize when turned on.
ERU-2M	Turned off via disconnect. Fans energize when switched on, wheel does not. Noisy fan belt.
RF-2M	Unit on with no control hrough BAS. Status is indicated. Unit installed hanging from ceiling without any vibration isolators. This is shaking the whole room.
AHU-3M	Unit is running to maintain SA temp. VFD modulates to maintain S.P. setpoint. Boiler system off so no heat test was performed.
AHU-4M	Not available from BAS for control.
AHU-5M	Not available from BAS for control.
AHU-6M	Not available from BAS for control.
FCU-1M	Not available from BAS for control.
FCU-2M	Not available from BAS for control.

Appendix 4

VAV BOX SET POINT COMPARISON

Administration Building VAV Boxes
Variable Air Volume Terminal Units

Mark	Airflow Setpoints (CFM)			Design Airflow (CFM)			Setpoint % from design		
	Max.	Min.	Htg.	Max.	Min.	Htg.	Max.	Min.	Htg.
VAV-1A-1	100	55	150	880	205	490	-88.6	-73.2	-69.4
VAV-1A-2	800	10	200	780	655	655	2.6	-98.5	-69.5
VAV-1A-3	700	10	100	640	605	605	9.4	-98.3	-83.5
VAV-1A-4	1000	10	350	600	580	580	66.7	-98.3	-39.7
VAV-1A-5	320	50	250	510	330	330	-37.3	-84.8	-24.2
VAV-1A-6	600	106	----	450	105	----	33.3	1.0	----
VAV-1A-7	165	30	70	150	30	120	10.0	0.0	-41.7
VAV-1A-8	1500	200	900	630	375	630	138.1	-46.7	42.9
VAV-1A-9	300	100	180	680	630	630	-55.9	-84.1	-71.4
VAV-1A-10	1000	200	375	540	540	540	85.2	-63.0	-30.6
VAV-1A-11	1000	300	375	880	540	540	13.6	-44.4	-30.6
VAV-2A-1	550	200	150	320	90	225	71.9	122.2	-33.3
VAV-2A-2	250	100	100	215	65	150	16.3	53.8	-33.3
VAV-2A-3	2250	200	800	1080	430	450	108.3	-53.5	77.8
VAV-2A-4	100	50	175	530	530	530	-81.1	-90.6	-67.0
VAV-2A-5	370	150	225	370	125	345	0.0	20.0	-34.8
VAV-2A-6	550	450	250	260	65	205	111.5	592.3	22.0
VAV-2A-7	494	205	210	495	205	210	-0.2	0.0	0.0
VAV-2A-8	119	20	75	120	50	120	-0.8	-60.0	-37.5
VAV-2A-9	1000	10	----	640	250	----	56.3	-96.0	----
VAV-2A-10	500	225	----	220	185	----	127.3	21.6	----
VAV-2A-11	155	35	100	155	35	125	0.0	0.0	-20.0
VAV-2A-12	225	50	178	225	65	180	0.0	-23.1	-1.1
VAV-2A-13	300	50	155	330	155	155	-9.1	-67.7	0.0
VAV-2A-14	500	125	210	415	125	210	20.5	0.0	0.0
VAV-2A-15	100	50	----	125	65	----	-20.0	-23.1	----
VAV-2A-16	500	25	----	175	65	----	185.7	-61.5	----
VAV-2A-17	300	214	----	615	215	----	-51.2	-0.5	----
VAV-2A-18	398	248	0	255	60	----	56.1	313.3	----
VAV-2A-19	600	250	214	575	125	215	4.3	100.0	-0.5
VAV-2A-20	270	25	----	270	95	----	0.0	-73.7	----
VAV-2A-21	300	15	----	340	265	----	-11.8	-94.3	----
VAV-2A-22	180	0	----	180	65	----	0.0	-100.0	----
VAV-2A-23	1500	600	1050	1865	470	965	-19.6	27.7	8.8
VAV-2A-24	1000	600	300	2925	850	1000	-65.8	-29.4	-70.0
VAV-2A-25	200	50	----	560	105	----	-64.3	-52.4	----
VAV-2A-26	400	135	120	650	165	330	-38.5	-18.2	-63.6
VAV-3A-1	200	100	180	450	175	210	-55.6	-42.9	-14.3
VAV-3A-2	500	200	200	270	60	180	85.2	233.3	11.1
VAV-3A-3	350	150	150	525	260	260	-33.3	-42.3	-42.3
VAV-3A-4	400	150	----	760	295	----	-47.4	-49.2	----
VAV-3A-5	100	45	100	100	45	----	0.0	0.0	----
VAV-3A-6	161	50	----	160	55	----	0.6	-9.1	----
VAV-3A-7	170	30	121	170	30	120	0.0	0.0	0.8
VAV-3A-8	250	100	110	320	295	295	-21.9	-66.1	-62.7
VAV-3A-9	150	50	50	405	105	180	-63.0	-52.4	-72.2
VAV-3A-10	750	30	1500	145	30	120	417.2	0.0	1150.0
VAV-3A-11	214	50	----	215	75	----	-0.5	-33.3	----
VAV-3A-12	650	200	----	610	195	----	6.6	2.6	----
VAV-3A-13	0	0	0	0	0	0	0.0	0.0	0.0
VAV-3A-14	300	225	----	660	225	----	-54.5	0.0	----
VAV-3A-15	285	40	120	285	40	120	0.0	0.0	0.0
VAV-3A-16	350	106	180	465	105	180	-24.7	1.0	0.0
VAV-3A-17	0	0	0	0	0	0	0.0	0.0	0.0
VAV-3A-18	850	400	----	1200	240	----	-29.2	66.7	----
VAV-3A-19	1300	700	----	1200	240	----	8.3	191.7	----
VAV-3A-20	450	200	150	265	120	150	69.8	66.7	0.0
VAV-3A-21	250	100	100	200	30	150	25.0	233.3	-33.3
VAV-3A-22	1000	500	----	290	120	----	244.8	316.7	----

VAV BOX SET POINT COMPARISON

Mark	Airflow Setpoints (CFM)			Design Airflow (CFM)			Setpoint % from design		
	Max.	Min.	Htg.	Max.	Min.	Htg.	Max.	Min.	Htg.
VAV-3A-23	449	150	----	450	450	----	-0.2	-66.7	----
VAV-3A-24	350	350	----	350	60	----	0.0	483.3	----
VAV-3A-25	350	350	200	350	350	350	0.0	0.0	-42.9
VAV-3A-26	1040	200	400	1040	490	490	0.0	-59.2	-18.4
VAV-3A-27	990	470	400	990	480	480	0.0	-2.1	-16.7
hance Building VAV Boxes									
Air Volume Terminal Units									
VAV-1M-1	328	170	218	330	170	220	-0.6	0.0	-0.9
VAV-1M-2	250	170	170	830	245	245	-69.9	-30.6	-30.6
VAV-1M-3	299	50	----	300	220	----	-0.3	-77.3	----
VAV-1M-4	690	210	300	690	210	510	0.0	0.0	-41.2
VAV-1M-5	1229	500	850	1230	370	900	-0.1	35.1	-5.6
VAV-1M-6	150	50	150	220	220	220	-31.8	-77.3	-31.8
VAV-1M-7	300	400	301	300	300	300	0.0	33.3	0.3
VAV-1M-8	500	400	----	750	750	750	-33.3	-46.7	----
VAV-1M-9	975	250	270	975	645	645	0.0	-61.2	-58.1
VAV-1M-10	500	125	150	1125	645	645	-55.6	-80.6	-76.7
VAV-1M-11	300	50	50	320	100	180	-6.3	-50.0	-72.2
VAV-1M-12	468	104	104	470	105	----	-0.4	-1.0	----
VAV-2M-1	300	89	250	250	90	150	20.0	-1.1	66.7
VAV-2M-2	600	220	265	600	220	265	0.0	0.0	0.0
VAV-2M-3	350	100	225	580	315	315	-39.7	-68.3	-28.6
VAV-2M-4	100	50	0	150	150	150	-33.3	-66.7	-100.0
VAV-2M-5	100	50	200	315	135	180	-68.3	-63.0	11.1
VAV-2M-6	400	144	148	155	45	150	158.1	220.0	-1.3
VAV-2M-7	200	100	200	800	125	250	-75.0	-20.0	-20.0
VAV-2M-8	350	100	200	1450	240	470	-75.9	-58.3	-57.4
VAV-2M-9	410	200	120	390	105	120	5.1	90.5	0.0
VAV-2M-10	330	100	100	600	180	210	-45.0	-44.4	-52.4
VAV-2M-11	75	25	100	150	90	120	-50.0	-72.2	-16.7
VAV-2M-12	301	265	248	300	265	265	0.3	0.0	-6.4
VAV-2M-13	----	----	----	230	180	180	----	----	----
VAV-2M-14	799	218	----	800	220	----	-0.1	-0.9	----
VAV-2M-15	200	100	148	430	135	150	-53.5	-25.9	-1.3
VAV-2M-16	300	200	218	440	220	220	-31.8	-9.1	-0.9
VAV-2M-17	394	155	----	395	155	155	-0.3	0.0	----
VAV-2M-18	828	695	350	830	695	695	-0.2	0.0	-49.6
VAV-2M-19	538	370	300	540	370	370	-0.4	0.0	-18.9
VAV-2M-20	330	150	100	225	220	220	46.7	-31.8	-54.5
VAV-2M-21	650	125	0	600	265	265	8.3	-52.8	-100.0
VAV-2M-22	450	299	299	1075	500	500	-58.1	-40.2	-40.2
VAV-2M-23	1500	500	800	1000	465	465	50.0	7.5	72.0
VAV-2M-24	400	165	280	705	165	280	-43.3	0.0	0.0
VAV-2M-25	69429	0	----	480	105	280	14364.4	-100.0	----
VAV-2M-26	75	50	----	275	275	275	-72.7	-81.8	----
VAV-2M-27	119	44	123	120	45	120	-0.8	-2.2	2.5
VAV-2M-28	398	273	----	275	275	275	44.7	-0.7	----
VAV-2M-29	998	220	449	2400	485	640	-58.4	-54.6	-29.8
VAV-2M-31	140	140	----	460	140	----	-69.6	0.0	----
VAV-2M-32	410	165	269	850	165	270	-51.8	0.0	-0.4
VAV-2M-33	1365	200	----	1365	240	----	0.0	-16.7	----
VAV-2M-34	500	100	----	305	60	----	63.9	66.7	----
VAV-2M-35	----	----	----	315	75	270	----	----	----
VAV-2M-36	----	----	----	760	165	225	----	----	----
VAV-2M-37	----	----	----	620	170	620	----	----	----
VAV-2M-38	750	500	----	1020	165	----	-26.5	203.0	----
VAV-3M-1	924	200	0	925	705	----	-0.1	-71.6	----
VAV-3M-2	----	----	----	925	705	----	----	----	----
VAV-3M-3	650	500	----	470	470	470	38.3	6.4	----

VAV BOX SET POINT COMPARISON

Mark	Airflow Setpoints (CFM)			Design Airflow (CFM)			Setpoint % from design		
	Max.	Min.	Htg.	Max.	Min.	Htg.	Max.	Min.	Htg.
VAV-3M-4	----	----	----	845	495	495	----	----	----
VAV-3M-5	998	148	----	1000	485	690	-0.2	-69.5	----
VAV-4M-1	64	64	----	200	140	----	-68.0	-54.3	----
VAV-4M-2	66	66	----	900	335	----	-92.7	-80.3	----
VAV-4M-3	66	66	----	250	50	----	-73.6	32.0	----
VAV-4M-4	----	----	----	200	50	----	----	----	----
VAV-4M-5	64	64	----	200	100	----	-68.0	-36.0	----
VAV-4M-6	67	67	----	690	300	----	-90.3	-77.7	----
VAV-4M-7	0	0	----	210	200	----	-100.0	-100.0	----
VAV-4M-8	----	----	----	460	105	----	----	----	----
VAV-4M-9	----	----	----	2340	0	----	----	----	----

Appendix 5

PSTA HVAC Equipment List

Tag	Location	Model No.	Serial No.	Est. Remaining Life	Notes
VAV-1A.6	A144 - Vendor Bid Rm	Trane : VCCF060000G0 FM00C_00000L4 W0000000000	~~B~~ R04H04788A F Mfg. 9/9/2004		Vav controller not working, contol cover & wiring disconnected. Service Elec
AHU-4A	A144 Vendor Bid Rm	Trane : BHC024A2A0A1 M01E000000B01 0000000000	T04J56751 Sales order: H3R495A		Noise in fan / bearing. Contrd box exists ~~on~~ in Mech A146 / A144 ~~3~~
VAV-1A.5	A144 Vendor Bid	Trane BCEF0800G0FM 00C000001L4W0 P0152100	R04H04785A		/ A144
VAV-1A7	A146 Mechanical	Trane VCEF060000G0FM 00C00000L4W0 P0102100	R04H04792A SO: H3R497AG		
AHU-1A	A146 Mechanical	Trane TIBA016H43320FA	M03M00286		
VAV-1A1	A150	Trane VCEF100000G0FM 00C00000LSW0F0662 100	R04H04768A SO: H3R497AA		cover removed from unit.
VAV-1A2	A147 Board Room	Trane VCEF080000G0FM 00C00000L4W0D0 402100	R04H04772A SO H3R497AB		
VAV-1A3	A147 Board Room		R04H04776A F mfg 9/9/2004		
VAV-1A9		Trane VCEF080000G0FM 00C00000L4W0D0 252100	R04H04783A SO: H3R497AD		
VAV-1A10	A	Trane VCEF080000G0FM 00C00000L4W0D0 402100	R04H04770A SO: H3R497AB		
VAV-1A11	A	Trane VCEF080000G0FM 00C00000L4W0D0 402100	R04H04771A SO: H3R497AB		

~~VAV-1-1A~~ V1_1A

Equipment Tag:	VAV-1-1A	*Completed By:*	STM / JBD
Date:	12/8/2015	*Company:*	Hahn
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 100	
2	Record the minimum airflow setpoint (CFM). 55	
3	Record the space heating setpoint (°F). 150	
4	Record the space cooling setpoint (°F). 100	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). 7	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? Next to TV	
10	Record the space temperature as read by the BAS. 72.4	
11	Record the space temperature using a handheld thermometer. 73.0	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 49.8	
14	Lower the zone temperature setpoint to demand maximum cooling. ↓55	(76)
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 73%	
17	Record the discharge airflow achieved (CFM). 100	
18	Record the discharge air temperature as read by the BAS (°F). 49.4	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. 45.5	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓ ↑76°	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 144	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 1	
28	Record the discharge air temperature sensor reading (°F). 86.5	

Functional Performance Checklists

~~VAV-1-1~~ VI-2A

Equipment Tag:	~~VAV-1-1~~ I-2A	Completed By:	SJM/JBD
Date:	12/8	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	800
2	Record the minimum airflow setpoint (CFM).	10
3	Record the space heating setpoint (°F).	200
4	Record the space cooling setpoint (°F).	71°
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	?
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	✓
7	Is the space temperature sensor communicating with the BAS?	✓
8	Is the space temperature sensor located such that it is out of the supply airflow?	✓
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	✓
10	Record the space temperature as read by the BAS.	69.3
11	Record the space temperature using a handheld thermometer.	71.5
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	53.6
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	@100% open only lists 200cfm
16	Record the damper position (% open).	60
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	May airflow
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	not reach
20	Is the discharge air temperature appropriate for cooling mode?	AHU S.P. control
21	Gradually raise the space cooling setpoint.	requires verification
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	~~Heat does not~~ energize
25	Record the airflow achieved (CFM).	Heat on in BAS, however
26	Does the electric heat initiate?	SA temp does not rise
27	Record the number of stages of electric heat energized.	remains 45°
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ V1-3A

Equipment Tag:	~~VAV-1-1~~ V1-3A	Completed By:	SJM/JDB
Date:	12/8/2015	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 700	
2	Record the minimum airflow setpoint (CFM). 10	
3	Record the space heating setpoint (°F). 100	
4	Record the space cooling setpoint (°F). Cl/Htg. 71° / 60°	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 72.1	
11	Record the space temperature using a handheld thermometer. 72.5	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	
13	Record the discharge air temperature from the air handling unit. 54.1	
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

VAV – ~~1-1~~ V1_4A

Equipment Tag:	~~VAV-1-1~~ V1_4A	Completed By:	SSM / JBD
Date:	12/8/2015	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	1000
2	Record the minimum airflow setpoint (CFM).	10
3	Record the space heating setpoint (°F).	350
4	Record the space cooling setpoint (°F).	74 / 60
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	✓
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	
13	Record the discharge air temperature from the air handling unit.	
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	✓ 80°F
24	Does the supply air damper maintain the minimum scheduled airflow?	✓
25	Record the airflow achieved (CFM).	358
26	Does the electric heat initiate?	✓
27	Record the number of stages of electric heat energized.	2
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ VL-5A

Equipment Tag:	VAV-1-1	*Completed By:*	ST MA
Date:		*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	320
2	Record the minimum airflow setpoint (CFM).	50 / 250
3	Record the space heating setpoint (°F).	67
4	Record the space cooling setpoint (°F).	74
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	
13	Record the discharge air temperature from the air handling unit.	
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

Functional Performance Checklists

~~VAV-1-1~~ V1_6A

Equipment Tag:	VAV-1-1	Completed By:	
Date:		Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 600	
2	Record the minimum airflow setpoint (CFM). 106 /NA	
3	Record the space heating setpoint (°F). —	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	
13	Record the discharge air temperature from the air handling unit.	
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

Functional Performance Checklists

~~VAV-1-1~~ V1_7A

VAV – ~~1-1~~

Equipment Tag:	VAV-1-1	*Completed By:*	
Date:		*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	~~CFM~~ 165
2	Record the minimum airflow setpoint (CFM).	30 / 75
3	Record the space heating setpoint (°F).	64
4	Record the space cooling setpoint (°F).	74
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	✓
7	Is the space temperature sensor communicating with the BAS?	✓
8	Is the space temperature sensor located such that it is out of the supply airflow?	✓
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	✓
10	Record the space temperature as read by the BAS.	69.4
11	Record the space temperature using a handheld thermometer.	71°F @ sensor
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	~~47.5~~ 46.
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	✓
16	Record the damper position (% open).	36%
17	Record the discharge airflow achieved (CFM).	157
18	Record the discharge air temperature as read by the BAS (°F).	46.3
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	50.5
20	Is the discharge air temperature appropriate for cooling mode?	✓
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	✓
25	Record the airflow achieved (CFM).	72 cfm
26	Does the electric heat initiate?	✓
27	Record the number of stages of electric heat energized.	2
28	Record the discharge air temperature sensor reading (°F).	88.1

Functional Performance Checklists

VAV – ~~1-1~~ N_8A Zone 2 | W/ both Zone VAV boxes open max 900 cfm @ 100% dampers

Equipment Tag:	VAV-~~1-1~~ N_8A	*Completed By:*	
Date:		*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 1500	
2	Record the minimum airflow setpoint (CFM). 200 / 900	
3	Record the space heating setpoint (°F). 67	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. ✓	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 52.9	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 1030	
18	Record the discharge air temperature as read by the BAS (°F). 49.6	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 922	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). 96.8	

VAV ~~-1-1~~ V1_9A Zone 2 / delay in BAS - S.P. does not adjust.

Equipment Tag:	~~VAV-1-1~~ V1_9A	*Completed By:*	
Date:	12/10	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 300	
2	Record the minimum airflow setpoint (CFM). 100 / 180	
3	Record the space heating setpoint (°F). 65	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). ?	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 70.7	
11	Record the space temperature using a handheld thermometer. 71	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit.	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓ 65.5°F	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 98% – 95% –	Flow Setpoint on BAS does not adjust to Max flow however system does
17	Record the discharge airflow achieved (CFM). ~~320~~ 307	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. 55	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ↑ 85°	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 174	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). 74.5	

~~VAV-1-1~~ V1_10A – Zone 3

Equipment Tag:	~~VAV-1-1~~ 1_10A	Completed By:	SSM
Date:	12/10	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 1000	
2	Record the minimum airflow setpoint (CFM). 200	
3	Record the space heating setpoint (°F). 67 / 64	
4	Record the space cooling setpoint (°F). ~~80~~ 74 / 80	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). ✓	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 73.5	
11	Record the space temperature using a handheld thermometer. 74.0	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 46.0	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 720	
18	Record the discharge air temperature as read by the BAS (°F). ~~55~~°	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. 56°	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 364	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). 90.8	

VAV – 1-1 V1 – 11A Zone 3

Equipment Tag:	VAV-1-1 V1-11A	Completed By:	
Date:	12/10	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 1000	
2	Record the minimum airflow setpoint (CFM). 300 / 375 Ht	
3	Record the space heating setpoint (°F). 67	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). ✓	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 71.1	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 44.2	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 100%, — w/ both 1_10Ht + 1-11A unable	
17	Record the discharge airflow achieved (CFM). 718	to achieve max cfm
18	Record the discharge air temperature as read by the BAS (°F). 44.2	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. 56.	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 267	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). 89.6	

Appendix 6

PSTA HVAC Equipment List

Tag	Location	Model No.	Serial No.	Est. Remaining Life	Notes
VAV-2A-8	A122 Mech Rm	Trane: VCEF06000G0 FM00C00000 L4WO D0102100	R04H04793A SO: H3R497AG		? Heat do not responding. - Shows correct mode / no elec ht energy
AHU-2A	A122 Mech Rm	Trane: TIBA025H41720 IFA	M03M00287		AHU- fan set to 45Hz @VFD
AHU-2ASF VFD	A122 Mech Rm	Trane: TR16022GT4C 20STR3DLF40A00 G0	00032GH444		in hand mode: set to 45Hz
VAV-2A-3	A123 Break Rm	Trane: VCEF10000G0FM 00C00000L5WOFO 552100	R04H04769A SO: H3R497AA		No damper or elec. ht. energized during test. Air flow sensor on VAV box reads "0".
VAV-2A-2	A125	Trane VCEF06000G0FM 00C00600 ____ 100			
VAV-2A1	A127	Trane VCEF08000G0FM 00C00000L4WODO 302100	R04H04777A SO: H3R497AC		
VAV-2A4	A128 Mens RR	Trane VCEF 04000G0FM 00000L4WO DO25 2100	R04H04784A SO: H3R497AD		
VAV-2A6		Trane VCEF05000G0FM 00C00000L4WODO 252100	R04H04812A SO: H3R497AL		
VAV-2A7		Trane VCEF06000G0FM 00C00000L4WODO 262100	R04H04814A SO: H3R497AM		
VAV-2A9		Trane VCEF08000G0FM 00C00000 4WO 00000000	R04H04818A SO: H3R497AN		
VAV-2A5		Trane VCEF06000G0FM 60C00000L4WODO 402100	R04H04810A SO: H3R497AK		

PSTA HVAC Equipment List

Tag	Location	Model No.	Serial No.	Est. Remaining Life	Notes
VAV-2A-10	A118 Marketing	VCCF 04000 GO FM 00C00000L4W0 00000000	R04H04823A SO: H3R497AP		
VAV2A-11	A111	VCEF050006OFM 00C00000L4W0 D010 2100	R04H04830A SO: H3R497AQ		Not in layout indicated on drawings
VAV2A-12	A112	VCEF06000GOFM 00C00080L4WODO 02021100	R04H04834A SO: H3R497AR		Not in location indicated on drawings
VAV2A-13	A113	VCEF06000GOFM 00C00000L4WODO 12100	R04H04802A SO: H3R497AJ		
VAV2A-14	A115	VCEF06000GOFM 00C00000L4WODO 2S2100	— —		
VAV2A15	A114	VCCF04000GOFM 00C00000L4W000 000000	R04H04824A SO: H3R497AP		
VAV2A16	A118	VCCF04000GOFM 00C00000 L4W0 000000	R04H04825A SO: H3R497AP		
VAV2A20	A118	VCCF05000GOFM 00C00000L4W000 000000	R04H04844A SO: H3R497AS		
VAV2A17	A118	VCCF04000GOFM 00C00000L4W000 000000	R04H04816A SO: H3R497AN		
VAV2A18	A119	—	—		Info tag covered up
VAV2A19	A139		R04H04778A F		Info tag against wall

PSTA HVAC Equipment List

Tag	Location	Model No.	Serial No.	Est. Remaining Life	Notes
VAV2A-21	A137	VCCF05000GOFM 00C00000L4W000 000000	SO: H3R497A S		
VAV2A22	A132	VCCF04000GOFM 00C00000L4W000 000000	R04H048826A SO: H3R497A P		
VAV2A-25		VCCF08000GOFM 00C00000L4W000 000000	R04H04817A SO: H3R497AN		
VAV2A26		VCEF08000GOFM 00C00000L4W0004 02100	R04H04773A SO: H3R497AB		
VAV2A24		VCEF16000GOFM 00C00000L5W0F140 2100	R04H04850A SO: H3R497AU		
VAV2A-23		VCEF12000GOFM 00C00000L5W0F12 02100	R04H04849A SO: H3R497AT		

VAV – 1~~1~~ V2_1A

Equipment Tag:	VAV-1-1 V2_1B	Completed By:	STM / JBD
Date:	12/10	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 550	
2	Record the minimum airflow setpoint (CFM). 200 / 150	
3	Record the space heating setpoint (°F). 70	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). ✓?	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 72.1	
11	Record the space temperature using a handheld thermometer. 74.5	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	
13	Record the discharge air temperature from the air handling unit.	
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

VAV – ~~1-1~~ V2-2A

* Also served by V2-4A - A125 in CEO assistants office.

Equipment Tag:	VAV-~~1-1~~ 2-2A	Completed By:	SJM/JBD
Date:	12/10	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	250
2	Record the minimum airflow setpoint (CFM).	100 / 100
3	Record the space heating setpoint (°F).	~~72~~ 76
4	Record the space cooling setpoint (°F).	80
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	NA
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	✓
7	Is the space temperature sensor communicating with the BAS?	✓
8	Is the space temperature sensor located such that it is out of the supply airflow?	✓
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	✓
10	Record the space temperature as read by the BAS.	76.3
11	Record the space temperature using a handheld thermometer.	78.
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	✓ 65.1
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	No. only 95 cfm @ 100% *
16	Record the damper position (% open).	100%
17	Record the discharge airflow achieved (CFM).	95
18	Record the discharge air temperature as read by the BAS (°F).	58.2
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	✓
21	Gradually raise the space cooling setpoint.	✓
22	Does the supply air damper modulate to reduce supply airflow?	✓
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	✓
24	Does the supply air damper maintain the minimum scheduled airflow?	No. does not change setpoint
25	Record the airflow achieved (CFM).	93
26	Does the electric heat initiate?	✓
27	Record the number of stages of electric heat energized.	2
28	Record the discharge air temperature sensor reading (°F).	~~85 F~~ 90.3

VAV – ~~1-1~~ V2-3A

Equipment Tag:	VAV-1-1 V2-3A	Completed By:	STM/JBD
Date:	12/10	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 2250	
2	Record the minimum airflow setpoint (CFM). 200 / 600	
3	Record the space heating setpoint (°F). 66	
4	Record the space cooling setpoint (°F). 73	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 70.4	
11	Record the space temperature using a handheld thermometer. 73	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 64.9	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). — lists 0 cfm	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

No changes in operation modes change in BAS however no Δ in box discharge temp.

VAV ~~1-1~~ V2_4A

Equipment Tag:	~~VAV-1-1~~ V2_4A	Completed By:	SJM / JDB
Date:	12/10	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 100	Min & max sppt too low!
2	Record the minimum airflow setpoint (CFM). 50 / 175	
3	Record the space heating setpoint (°F). 68	
4	Record the space cooling setpoint (°F). 78	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 72.5	
11	Record the space temperature using a handheld thermometer. 74.5	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 53.5	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? Yes, however flow setpoint	
16	Record the damper position (% open). does not Δ in BAS	
17	Record the discharge airflow achieved (CFM). 100	
18	Record the discharge air temperature as read by the BAS (°F). 57.7	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. 70.	
20	Is the discharge air temperature appropriate for cooling mode? Yes	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 167	
26	Does the electric heat initiate? ✓ — takes a while.	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

VAV – ~~1-1~~ V2-SA Zone 4

Equipment Tag:	VAV-1-1 V2-SA	Completed By:	STM/JDB
Date:	12/10	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	370
2	Record the minimum airflow setpoint (CFM).	150 / 225
3	Record the space heating setpoint (°F).	66
4	Record the space cooling setpoint (°F).	68
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	X
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	✓
7	Is the space temperature sensor communicating with the BAS?	✓
8	Is the space temperature sensor located such that it is out of the supply airflow?	✓
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	✓
10	Record the space temperature as read by the BAS.	74.1
11	Record the space temperature using a handheld thermometer.	77.0
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	64.9
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	Flow Setpoint ↓'s however
16	Record the damper position (% open).	Airflow not achieved @ 100% open
17	Record the discharge airflow achieved (CFM).	106
18	Record the discharge air temperature as read by the BAS (°F).	59.1
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	65.5
20	Is the discharge air temperature appropriate for cooling mode?	✓
21	Gradually raise the space cooling setpoint.	✓ ↓ requires more air
22	Does the supply air damper modulate to reduce supply airflow?	✓
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

VAV – 1-1 V2-6A Zone 2

Equipment Tag:	~~VAV-1-1~~ V2-6A	Completed By:	SJM/JDB
Date:	12/10	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 550	
2	Record the minimum airflow setpoint (CFM). 450 / 250	
3	Record the space heating setpoint (°F). 66	
4	Record the space cooling setpoint (°F). 72	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 74.5	
11	Record the space temperature using a handheld thermometer. 77.5	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 60.2	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow?	Stpt Δ's however max airflow not achieved
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 194	
18	Record the discharge air temperature as read by the BAS (°F). 65.7	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. 68.5	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ V2-7A Zone 2

Equipment Tag:	~~VAV-1-1~~ V2-7A	Completed By:	STM / JDB
Date:	12/10	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	494
2	Record the minimum airflow setpoint (CFM).	205 / 210
3	Record the space heating setpoint (°F).	65
4	Record the space cooling setpoint (°F).	72
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	X
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	✓
7	Is the space temperature sensor communicating with the BAS?	✓
8	Is the space temperature sensor located such that it is out of the supply airflow?	✓
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	✓
10	Record the space temperature as read by the BAS.	73.1
11	Record the space temperature using a handheld thermometer.	77.0
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	60.2
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	Airflow not met @ 100%
16	Record the damper position (% open).	100%
17	Record the discharge airflow achieved (CFM).	136
18	Record the discharge air temperature as read by the BAS (°F).	65.2
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	69.5
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

Functional Performance Checklists

Verify zone sensor? 6 ΔT prior to VAV box

VAV – 1-1 V2_8A

Equipment Tag:	~~VAV-1-1~~ V2_8A	Completed By:	
Date:		Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 119	
2	Record the minimum airflow setpoint (CFM). 20 / 75	
3	Record the space heating setpoint (°F). 66	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 66.8	
11	Record the space temperature using a handheld thermometer. 68.0	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 58.3	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓ does	
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). ? – does not display airflow	
18	Record the discharge air temperature as read by the BAS (°F). 51.1	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. 53	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

Functional Performance Checklists

VAV –~~1-1~~ V2_9A Zone 1

Equipment Tag:	~~VAV-1-1~~ V2_9A	Completed By:	SSM/JDB
Date:	12/10	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	1000
2	Record the minimum airflow setpoint (CFM).	10
3	Record the space heating setpoint (°F).	NA
4	Record the space cooling setpoint (°F).	74
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	NA
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	✓
7	Is the space temperature sensor communicating with the BAS?	✓
8	Is the space temperature sensor located such that it is out of the supply airflow?	✓
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	✓
10	Record the space temperature as read by the BAS.	74.0
11	Record the space temperature using a handheld thermometer.	77.0
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	~~55~~ 46.0
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	N/A - does not show
16	Record the damper position (% open).	N/A up on BAS
17	Record the discharge airflow achieved (CFM).	N/A
18	Record the discharge air temperature as read by the BAS (°F).	N/A
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	70/69
20	Is the discharge air temperature appropriate for cooling mode?	✓
21	Gradually raise the space cooling setpoint.	✓
22	Does the supply air damper modulate to reduce supply airflow?	✓
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	No heater
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

VAV ~~-1-1~~ ~~V2~~ V2-10

Equipment Tag:	~~VAV-1-1~~ V2-10	Completed By:	STM/JDB
Date:	12/14	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 500	
2	Record the minimum airflow setpoint (CFM). 225	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). NA	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS. 76.9	
11	Record the space temperature using a handheld thermometer. 78.0	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 50.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow?	no testing allowed
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV – 1-1~~ V2-11

Equipment Tag:	~~VAV-1-1~~ V2-11	*Completed By:*	STm/JDB
Date:	12/14	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	155
2	Record the minimum airflow setpoint (CFM).	35 / 100
3	Record the space heating setpoint (°F).	67
4	Record the space cooling setpoint (°F).	76
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	X
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	?
7	Is the space temperature sensor communicating with the BAS?	?
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	71.5
11	Record the space temperature using a handheld thermometer.	73.0
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	57.8
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	~~No~~ 100% only 38 cfm
16	Record the damper position (% open).	100%
17	Record the discharge airflow achieved (CFM).	38
18	Record the discharge air temperature as read by the BAS (°F).	67.4
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	70.5
20	Is the discharge air temperature appropriate for cooling mode?	?
21	Gradually raise the space cooling setpoint.	✓
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	✓
24	Does the supply air damper maintain the minimum scheduled airflow?	moves ~~to~~ to htg. stp.
25	Record the airflow achieved (CFM).	38 — too low
26	Does the electric heat initiate?	No. — low flow
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ V2_12

Equipment Tag:	~~VAV-1-1~~ V2_12	Completed By:	STM / JDB
Date:	12/14	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 225	
2	Record the minimum airflow setpoint (CFM). 50 / 17%	
3	Record the space heating setpoint (°F). 66	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS. 74.9	
11	Record the space temperature using a handheld thermometer. 76.5	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 57.4	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? Yes, only 64%	
16	Record the damper position (% open). ~~64%~~ 100%	
17	Record the discharge airflow achieved (CFM). 142 return	
18	Record the discharge air temperature as read by the BAS (°F). 70.6	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. 75.5	
20	Is the discharge air temperature appropriate for cooling mode? ?	
21	Gradually raise the space cooling setpoint. ?	
22	Does the supply air damper modulate to reduce supply airflow? ?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? Stp. Δ to htg.	
25	Record the airflow achieved (CFM). 142 @ 97% damper pos.	
26	Does the electric heat initiate? No – low flow	
27	Record the number of stages of electric heat energized. x	
28	Record the discharge air temperature sensor reading (°F). x	

Functional Performance Checklists

~~VAV~~ – 1-1 V2-13

Equipment Tag:	~~VAV-1-1~~ V2_13	Completed By:	STM / JDB
Date:	12/14	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 300	
2	Record the minimum airflow setpoint (CFM). 50 155	
3	Record the space heating setpoint (°F). 66	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 76.2	
11	Record the space temperature using a handheld thermometer. 77.5	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 43.9	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow?	goes to 100% – does not achieve max cfm
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 87	
18	Record the discharge air temperature as read by the BAS (°F). 58.5	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. 67.5	
20	Is the discharge air temperature appropriate for cooling mode? ?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? X – too low	
25	Record the airflow achieved (CFM). 83 @ 100%	
26	Does the electric heat initiate? No – low flow	
27	Record the number of stages of electric heat energized. X	
28	Record the discharge air temperature sensor reading (°F). X	

~~VAV-1-1~~ V2-14

Equipment Tag:	~~VAV-1-1~~ V2_14	Completed By:	SSM / JDB
Date:	12/14/2015	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	500
2	Record the minimum airflow setpoint (CFM).	125 / 210
3	Record the space heating setpoint (°F).	65
4	Record the space cooling setpoint (°F).	74
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	X
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	✓
7	Is the space temperature sensor communicating with the BAS?	✓
8	Is the space temperature sensor located such that it is out of the supply airflow?	✓
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	✓
10	Record the space temperature as read by the BAS.	74.9
11	Record the space temperature using a handheld thermometer.	77.5
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	43.9
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	No
16	Record the damper position (% open).	100%
17	Record the discharge airflow achieved (CFM).	172
18	Record the discharge air temperature as read by the BAS (°F).	56.4
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	68.0
20	Is the discharge air temperature appropriate for cooling mode?	?
21	Gradually raise the space cooling setpoint.	?
22	Does the supply air damper modulate to reduce supply airflow?	?
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	✓
24	Does the supply air damper maintain the minimum scheduled airflow?	Setpoint OK, but ctrl does not
25	Record the airflow achieved (CFM).	167 @ 100%
26	Does the electric heat initiate?	NO – low flow
27	Record the number of stages of electric heat energized.	X
28	Record the discharge air temperature sensor reading (°F).	X

~~VAV-1-1~~ V2-15

Equipment Tag:	~~VAV-1-1~~ V2-15	Completed By:	STM / JDB
Date:	12/14	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 160	
2	Record the minimum airflow setpoint (CFM). 50	
3	Record the space heating setpoint (°F). — } no setpoints for cooling	
4	Record the space cooling setpoint (°F). —	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ?	
7	Is the space temperature sensor communicating with the BAS? ?	
8	Is the space temperature sensor located such that it is out of the supply airflow? ?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ?	
10	Record the space temperature as read by the BAS. 71.4	
11	Record the space temperature using a handheld thermometer. 75.0	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 49.9	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow?	mode not set up
16	Record the damper position (% open).	adjustment to
17	Record the discharge airflow achieved (CFM).	max cfm
18	Record the discharge air temperature as read by the BAS (°F).	does not Δ damper
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	position
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

Functional Performance Checklists

w/ VFD @ 60Hz low flow
- V2-5A, V2-7A, V2-10A
V2-26A

~~VAV-1-1~~ V2-16

Equipment Tag:	~~VAV-1-1~~ V2-16	Completed By:	SSM/JDB
Date:	12/14	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	500
2	Record the minimum airflow setpoint (CFM).	25 / no htg stpt.
3	Record the space heating setpoint (°F).	X
4	Record the space cooling setpoint (°F).	74
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	X
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	✓
7	Is the space temperature sensor communicating with the BAS?	✓
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	72.3
11	Record the space temperature using a handheld thermometer.	74.5
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	49.9
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	✓
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	64
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	No heat
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	Δ graphic
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV – 1-1~~ V2-17

Equipment Tag:	~~VAV-1-1~~ V2-17	Completed By:	STM / JDB
Date:	12/14	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 300	
2	Record the minimum airflow setpoint (CFM). 214 / No htg	
3	Record the space heating setpoint (°F). No htg stpt.	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). ✗	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 73.7	
11	Record the space temperature using a handheld thermometer. 75.5	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 49.9	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 76%	
17	Record the discharge airflow achieved (CFM). 297	
18	Record the discharge air temperature as read by the BAS (°F). -NO DA sensor reading.	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. 65.5	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	No heat in Lab
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

Functional Performance Checklists

~~VAV-1-1~~ V2_18

Equipment Tag:	VAV-1-1 V2_18	Completed By:	STM/TDB
Date:	12/14	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 398	
2	Record the minimum airflow setpoint (CFM). 248 / Ø ?	
3	Record the space heating setpoint (°F). 66 ~~Ø~~ ?	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 72.7	
11	Record the space temperature using a handheld thermometer. 76.0	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 53.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 62	
17	Record the discharge airflow achieved (CFM). 340	
18	Record the discharge air temperature as read by the BAS (°F). 67.5	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	No heat
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ V2_19

Equipment Tag:	~~VAV-1-1~~ V2_19	Completed By:	SJM/JDB
Date:	12/14	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 600	
2	Record the minimum airflow setpoint (CFM). 250 /214	
3	Record the space heating setpoint (°F). 66	
4	Record the space cooling setpoint (°F). 70	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 71.6	
11	Record the space temperature using a handheld thermometer. 78.0	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 44.0	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? No	
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 424	
18	Record the discharge air temperature as read by the BAS (°F). 55.7	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 212	
26	Does the electric heat initiate? ~~X~~ Y	
27	Record the number of stages of electric heat energized. ✓	
28	Record the discharge air temperature sensor reading (°F). 96 +	

~~VAV-1-1~~ V2.20

Equipment Tag:	~~VAV-1-1~~ V2.20	Completed By:	SJM/JDB
Date:	12/14	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	270
2	Record the minimum airflow setpoint (CFM).	25 / no htg setpoints
3	Record the space heating setpoint (°F).	X
4	Record the space cooling setpoint (°F).	74
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	X
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	✓
7	Is the space temperature sensor communicating with the BAS?	✓
8	Is the space temperature sensor located such that it is out of the supply airflow?	✓
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	✓
10	Record the space temperature as read by the BAS.	73.4
11	Record the space temperature using a handheld thermometer.	Brea 76.5
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	50.0
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	No
16	Record the damper position (% open).	99%
17	Record the discharge airflow achieved (CFM).	117 - too low
18	Record the discharge air temperature as read by the BAS (°F).	NA - know no readin
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	No heat
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	Δ graphic
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ V2_21

Equipment Tag:	~~VAV-1-1~~ V2_21	Completed By:	SJM / JDB
Date:	12/14	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 300	
2	Record the minimum airflow setpoint (CFM). 15 / no htg setpoint	
3	Record the space heating setpoint (°F). ~~68~~ X –	
4	Record the space cooling setpoint (°F). 71	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 70.4	
11	Record the space temperature using a handheld thermometer. 75.0	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 50.0	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? No	
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 138	
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. 73.0	
20	Is the discharge air temperature appropriate for cooling mode? ?	
21	Gradually raise the space cooling setpoint. ?	
22	Does the supply air damper modulate to reduce supply airflow? ?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	No heat
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ V2_22

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM/JDB
Date:	12/14 V2-22	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 1480	
2	Record the minimum airflow setpoint (CFM). 0 / no htg airflow	no control points in program
3	Record the space heating setpoint (°F). X - no setpoints	
4	Record the space cooling setpoint (°F). X	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS. 75.2	
11	Record the space temperature using a handheld thermometer. 76.0	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 50.0	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV – 1-1~~ V2_23

Equipment Tag:	~~VAV-1-1~~ V2_23	*Completed By:*	STM / JDB
Date:	12/14	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 1500	
2	Record the minimum airflow setpoint (CFM). 600 / 1050	
3	Record the space heating setpoint (°F). 66	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 76.2	
11	Record the space temperature using a handheld thermometer. 78.0	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 53.2	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? does not reach ctw @ 100%	
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 1150	
18	Record the discharge air temperature as read by the BAS (°F). 54.2	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. 72.0	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 1070	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). 94.7	

Functional Performance Checklists

~~VAV – 1-1~~ V2_24

Equipment Tag:	~~VAV-1-1~~ V2_24	Completed By:	SJM / JDB
Date:	12/14	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	1000
2	Record the minimum airflow setpoint (CFM).	600 / 300
3	Record the space heating setpoint (°F).	66
4	Record the space cooling setpoint (°F).	74
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	x
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	✓
7	Is the space temperature sensor communicating with the BAS?	✓
8	Is the space temperature sensor located such that it is out of the supply airflow?	✓
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	✓
10	Record the space temperature as read by the BAS.	74.4
11	Record the space temperature using a handheld thermometer.	78.0
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	53.2
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	✓
16	Record the damper position (% open).	40%
17	Record the discharge airflow achieved (CFM).	1030
18	Record the discharge air temperature as read by the BAS (°F).	56.3
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	72.0
20	Is the discharge air temperature appropriate for cooling mode?	?
21	Gradually raise the space cooling setpoint.	?
22	Does the supply air damper modulate to reduce supply airflow?	?
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	✓
24	Does the supply air damper maintain the minimum scheduled airflow?	✓
25	Record the airflow achieved (CFM).	600
26	Does the electric heat initiate?	✓ — turns off
27	Record the number of stages of electric heat energized.	1
28	Record the discharge air temperature sensor reading (°F).	

heating sequence unsuccessful.

~~VAV – 1-1~~ V2_25

Equipment Tag:	~~VAV-1-1~~ V2_25	Completed By:	SJM/JDB
Date:	12/14	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 200	not controlled?
2	Record the minimum airflow setpoint (CFM). 50	~~50x2~~ not
3	Record the space heating setpoint (°F). x	
4	Record the space cooling setpoint (°F). x	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS. 68.1	
11	Record the space temperature using a handheld thermometer. 72.5	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 50.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow?	No control
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ V2_26

Equipment Tag:	~~VAV-1-1~~ V2_26	Completed By:	SJM/JDB
Date:	12/14	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 400	
2	Record the minimum airflow setpoint (CFM). 135 / 120	
3	Record the space heating setpoint (°F). 66	
4	Record the space cooling setpoint (°F). 73	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. ~~77.3~~ 70.7	
11	Record the space temperature using a handheld thermometer. 82.0	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 50.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? No	
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 270	
18	Record the discharge air temperature as read by the BAS (°F). 70.5	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 120	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F). 92.↑	

Appendix 7

PSTA HVAC Equipment List

Tag	Location	Model No.	Serial No.	Est. Remaining Life	Notes
VAV 3A5		VCCF04000GOFM 00C 00000L4W000 000000	R04H04828A SO: H3R497AP		Disabled, damper at 100%
VAV3A1	A207	VCEF06000GOFM 00C00000L4WODO 252100	R04H04815A SO: H3R497AM		
VAV3A2	A208	VCEF06000GOFM 00C00000L4WODO 202100	R04H04838A SO: H3R497AR		
VAV3A3	A208	VCEF04000GOFM 00C00000L4WODO 202100	R04H04852A SO: H3R497AV		
VAV3A4	A208	VCCF08000FM00C 00000L4W000 000000	R04H04822A SO: H3R497AN		
VAV3A6	A211	VCCF04000GOFM 00C00000L4W000 000000	R04H04829A SO: H3R497AP		
VAV3A7	A212	VCEF06000GOFM 00C00000L4WODO 102100	R04H04800A		
VAV3A9	A217	VCEF06000GOFM 00C00000L4WODO 202100	R04H04841A		
VAV3A10	A217	VCEF06000GOFM 00C00000L4WODO 102100	R04H04798A		
VAV1A8	A243	VCEF10000FM 00C00000L5WOFO 702100	R04H04___A		
VAV3A11	A219	VCCF04000GOFM 00C00000L4W000 000000	R04H04827A		Not in room designated on plans

PSTA HVAC Equipment List

Tag	Location	Model No.	Serial No.	Est. Remaining Life	Notes
VAV3A8	A213	VCEF060000GOFM 00C00000L4W0D0 202100	R041T04840A		
VAV3A12	A220	VCCF080000GOFM 00C00000L4W000 060000	R041T04820A		
VAV3A16	A232	VCEF060000GOFM 00C00000L4W0D0 202100	R04HT04837A		
VAV3A15	A234	VCEF060000GOFM 00C00000L4W0D0 102100	R04HT04799A		
VAV3A19	A238	VCCF100000GOFM 00C00000L4W000 000000	R04HT04856A		
VAV3A18	A230	VCCF100000GOFM 00C00000L4W000 000000	R04HT04855A		
VAV3A14	A230	VCCF080000GOFM 00C00000L4W000 000000	R041T04821A		
VAV3A20	A226	VCEF060000GOFM 00C00000L4W0D015 2100	R041T04808A		
VAV3A21	A241	VCEF060000GOFM 00C00000L4W0D0 152100	R041T04809A		
VAV3A22	A241	VCCF050000GOFM 00C00000L4W000 000000	R04HT04847A		
VAV3A23	A239	VCCF060000GOFM 00C00000L4W000 000000	R04HT04791A		

PSTA HVAC Equipment List

Tag	Location	Model No.	Serial No.	Est. Remaining Life	Notes
VAV3A-24	A210	VCCF05000GOFM 00C60000L4W000 000000	R04H04848A		
VAV3A25	A229	VCEF06000GOFM 00C00000L4WODO 20400	R04H04839A		
VAV3A26	A239	VCEF10000GOFM 00C00000L4W ODO 402100	R04H04859A		Not in ~~location~~ room indicated on plans
VAV3A27	A224	VCEF10000GOFM 00C0000 0 L4WODO 402100	R04H04860A		
EF-1A	Roof	GB-141-4-X	04105032		
EF-2A	Roof	GB-220HP-30-X	04105083		
EF-3A	Roof	GB-220HP-30X	04105083		
ACCU-1A	Roof/Server	Data-Aire ?	?		
ACCU-1B?	Roof/server	Liebert PFH096ACAL7	Y14FG13802		

~~VAV-1-1~~ V3_1A 23

Equipment Tag:	~~VAV-1-1~~ V3_1A	Completed By:	STH / JDG
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 200	
2	Record the minimum airflow setpoint (CFM). 100 / 180	
3	Record the space heating setpoint (°F). 70	
4	Record the space cooling setpoint (°F). 72	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓ 71.1	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 71.1	
11	Record the space temperature using a handheld thermometer. ◯	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	Stg 1 elec ht shown as on
13	Record the discharge air temperature from the air handling unit. 46.4	
14	Lower the zone temperature setpoint to demand maximum cooling. ↓55	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	Flow setpoint does not update in graphics
16	Record the damper position (% open). 67%	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F). 59.0	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ◯	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ↑85	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 180	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 1	
28	Record the discharge air temperature sensor reading (°F). 87.3	

~~VAV-1-1~~ V3_2A Z1

Equipment Tag:	~~VAV-1-1~~ V3_2A	Completed By:	STM / JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 500	
2	Record the minimum airflow setpoint (CFM). ~~200~~ 200 / 200	
3	Record the space heating setpoint (°F). 68	
4	Record the space cooling setpoint (°F). 71	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ~~✗~~ ?	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 73.2	
11	Record the space temperature using a handheld thermometer. ◯	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	Stg 2 elec ht Stays on?
13	Record the discharge air temperature from the air handling unit. 64.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ↓ 55°	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	Flow S.P. does ~~not~~ D in graphic
16	Record the damper position (% open). 100%	— max airflow not met!
17	Record the discharge airflow achieved (CFM). 263	
18	Record the discharge air temperature as read by the BAS (°F). 64.8	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ◯	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ↑ 85	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). ~~✗~~ 195	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). 80+	

Functional Performance Checklists

~~VAV-1-1~~ V3_3A Z1

Equipment Tag:	~~VAV-1-1~~ V3_3A	Completed By:	SJM/JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 350	
2	Record the minimum airflow setpoint (CFM). 150 / 150	
3	Record the space heating setpoint (°F). 66	
4	Record the space cooling setpoint (°F). 76	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	x
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	✓
7	Is the space temperature sensor communicating with the BAS?	✓ ?
8	Is the space temperature sensor located such that it is out of the supply airflow?	✓
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	✓
10	Record the space temperature as read by the BAS. 72.7	
11	Record the space temperature using a handheld thermometer.	○
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit. 64.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ↓55	
15	Does the supply air damper modulate to the maximum scheduled airflow?	✓ Flow S.P not updated
16	Record the damper position (% open). 67%	but Airflow does ↑ to max
17	Record the discharge airflow achieved (CFM). 358	
18	Record the discharge air temperature as read by the BAS (°F). 65.0	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	○
20	Is the discharge air temperature appropriate for cooling mode?	✓
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ↑85°	
24	Does the supply air damper maintain the minimum scheduled airflow?	✓
25	Record the airflow achieved (CFM). 153	✓
26	Does the electric heat initiate?	✓
27	Record the number of stages of electric heat energized. 1	
28	Record the discharge air temperature sensor reading (°F). 80.5	

Functional Performance Checklists

~~VAV-1-1~~ V3_4A 24

Equipment Tag:	~~VAV-1-1~~ V3_4A	Completed By:	JJM/JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 400	
2	Record the minimum airflow setpoint (CFM). 150	/ no heat
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 72	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓ ?	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 73.3	
11	Record the space temperature using a handheld thermometer. ○	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 54.2	
14	Lower the zone temperature setpoint to demand maximum cooling. ↓55	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 69%	
17	Record the discharge airflow achieved (CFM). 396	
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ○	
20	Is the discharge air temperature appropriate for cooling mode? ?	
21	Gradually raise the space cooling setpoint. ~~?~~ ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ↓ to min	
25	Record the airflow achieved (CFM). 146 @ 45% damper pos.	
26	Does the electric heat initiate? NA	
27	Record the number of stages of electric heat energized. NA	
28	Record the discharge air temperature sensor reading (°F). NA	

~~VAV-1-1~~ V3_SA 25

Equipment Tag:	~~VAV-1-1~~ V3_SA	Completed By:	STM / JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 100	
2	Record the minimum airflow setpoint (CFM). 45 / 100	
3	Record the space heating setpoint (°F). 73	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? No	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 72.6	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	
13	Record the discharge air temperature from the air handling unit.	Box is disabled
14	Lower the zone temperature setpoint to demand maximum cooling.	~~55°~~
15	Does the supply air damper modulate to the maximum scheduled airflow?	- 100% open
16	Record the damper position (% open).	- Controls do not allow adjustment.
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	~~Y~~ No changes occur due to setpoint adjustment.
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ V3.6A Z4

Equipment Tag:	~~VAV-1-1~~ V3.6A	Completed By:	SJM/JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 161	
2	Record the minimum airflow setpoint (CFM). 50 / NA	no heat?
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 76	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ?	S.P is 76
7	Is the space temperature sensor communicating with the BAS? ?	Space is 71.3
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	Min airflow ✓
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 71.3	
11	Record the space temperature using a handheld thermometer. ◯	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 54.2	
14	Lower the zone temperature setpoint to demand maximum cooling. ↓55	
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open). 100%	too low!
17	Record the discharge airflow achieved (CFM). 136	Slow reacting?!
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ◯	
20	Is the discharge air temperature appropriate for cooling mode? ?	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	reduces to min
25	Record the airflow achieved (CFM). 47	@ 66% damper pos.
26	Does the electric heat initiate? NA	
27	Record the number of stages of electric heat energized. N/A	
28	Record the discharge air temperature sensor reading (°F). N/A	

~~VAV-1-1~~ V3_7A 21

Equipment Tag:	~~VAV-1-1~~ V3_7A	Completed By:	SJM/JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 170	
2	Record the minimum airflow setpoint (CFM). 30 / 121	
3	Record the space heating setpoint (°F). 68	
4	Record the space cooling setpoint (°F). 72	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	not listed
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 71.7	
11	Record the space temperature using a handheld thermometer. ✓	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 64.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ↓55	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	Very slow reacting damper
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F). ~~70.4~~	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 119 @ 21% damper	slow reacting!
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 4 2	
28	Record the discharge air temperature sensor reading (°F). 86°	

Functional Performance Checklists

~~VAV – 1-1~~ V3_8A Z1

Equipment Tag:	~~VAV-1-1~~ V3_8A	Completed By:	STN / JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 1000	250
2	Record the minimum airflow setpoint (CFM). 750	100 / 110
3	Record the space heating setpoint (°F). 65	~~#~~
4	Record the space cooling setpoint (°F). 72	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	not listed
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 70.6	
11	Record the space temperature using a handheld thermometer. ○	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 64.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow?	- goes to 100% however
16	Record the damper position (% open). 100%	- Setpoint too high.
17	Record the discharge airflow achieved (CFM). 165	- low S. Press.
18	Record the discharge air temperature as read by the BAS (°F). 68.7	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ○	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	↑ increases but we limited due to occ comfort request

Functional Performance Checklists

- occs prefer hot!
- space heaters also in use!
- Very warm / 3 offices

~~VAV-1-1~~ V3_9A 22

Equipment Tag:	~~VAV-1-1~~ V3_9A	*Completed By:*	STN / JDB
Date:	12/17	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). ~~150~~ 150	
2	Record the minimum airflow setpoint (CFM). 50 / 150	
3	Record the space heating setpoint (°F). 78	
4	Record the space cooling setpoint (°F). 80	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 75.8	
11	Record the space temperature using a handheld thermometer. ○	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	Box airflow setpoints are too low
13	Record the discharge air temperature from the air handling unit.	
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open).	- Set to 80°F
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	damper & Flow setpoints Δ with controls
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

Functional Performance Checklists

~~VAV-1-1~~ V3_10A 2Z

Equipment Tag:	~~VAV-1-1~~ V3_10A	Completed By:	SJM / SDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 750	
2	Record the minimum airflow setpoint (CFM). 30 / 1500?	
3	Record the space heating setpoint (°F). 65	
4	Record the space cooling setpoint (°F). 72	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 70.9	
11	Record the space temperature using a handheld thermometer. ○	
	Space Temperature Control	Setpoints too high?
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	Heat flow @ 1500 cfm
13	Record the discharge air temperature from the air handling unit. 50.7	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? No	~~not~~
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 32	
18	Record the discharge air temperature as read by the BAS (°F). 67.1	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ○	
20	Is the discharge air temperature appropriate for cooling mode? x	
21	Gradually raise the space cooling setpoint. x	
22	Does the supply air damper modulate to reduce supply airflow? x	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? No – Stpt Δ but	
25	Record the airflow achieved (CFM). – ~~air~~ damper @ 100%	
26	Does the electric heat initiate? – air flow too low	
27	Record the number of stages of electric heat energized. – Heat airflow S.P too high	
28	Record the discharge air temperature sensor reading (°F). –	

~~VAV-1-1~~ V3_11A Z4

Equipment Tag:	~~VAV-1-1~~ V3_11A	Completed By:	STM/JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 214	
2	Record the minimum airflow setpoint (CFM). 50 / X	no heat?
3	Record the space heating setpoint (°F). 0°	
4	Record the space cooling setpoint (°F). 76 /	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 71.1	
11	Record the space temperature using a handheld thermometer. ◯	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 54.2	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ~~No~~ 100% but airflow not met	
16	Record the damper position (% open). 100	
17	Record the discharge airflow achieved (CFM). 153	
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ◯	
20	Is the discharge air temperature appropriate for cooling mode? x	
21	Gradually raise the space cooling setpoint. x	
22	Does the supply air damper modulate to reduce supply airflow? x	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 51 @ 37%	
26	Does the electric heat initiate? NA /?	
27	Record the number of stages of electric heat energized. x	
28	Record the discharge air temperature sensor reading (°F). x	

~~VAV-1-1~~ V3_12A Z4

Equipment Tag:	~~VAV-1-1~~ V3-12A	Completed By:	SJM / JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 650	
2	Record the minimum airflow setpoint (CFM). 200	/ X - no heat?
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 76	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	X
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	✓
7	Is the space temperature sensor communicating with the BAS?	✓
8	Is the space temperature sensor located such that it is out of the supply airflow?	✓
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	✓
10	Record the space temperature as read by the BAS. 72.4	
11	Record the space temperature using a handheld thermometer.	○
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit. 54.2	
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow? 100% but airflow not met	
16	Record the damper position (% open). 100	
17	Record the discharge airflow achieved (CFM). 487	
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	○
20	Is the discharge air temperature appropriate for cooling mode?	X
21	Gradually raise the space cooling setpoint.	X
22	Does the supply air damper modulate to reduce supply airflow?	X
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	✓
24	Does the supply air damper maintain the minimum scheduled airflow?	✓
25	Record the airflow achieved (CFM). 193 @ 68%	
26	Does the electric heat initiate? NA/?	
27	Record the number of stages of electric heat energized.	X
28	Record the discharge air temperature sensor reading (°F).	X

Functional Performance Checklists

~~VAV-1-1~~ V3_14A 24

Equipment Tag:	~~VAV-1-1~~ V3_14A	Completed By:	STM/JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 300	
2	Record the minimum airflow setpoint (CFM). 225 / x	- no heating
3	Record the space heating setpoint (°F). x	
4	Record the space cooling setpoint (°F). 72	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓ ?	no DA temp sensor
7	Is the space temperature sensor communicating with the BAS? ?	
8	Is the space temperature sensor located such that it is out of the supply airflow? ?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS. 76.7	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 54.2	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow?	opens but does not meet max airflow!
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 191	
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode? x	
21	Gradually raise the space cooling setpoint. x	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow?	min flow setpoint
25	Record the airflow achieved (CFM). 195 @ 100%	
26	Does the electric heat initiate? NA	
27	Record the number of stages of electric heat energized. NA	
28	Record the discharge air temperature sensor reading (°F). NA	

Functional Performance Checklists

~~VAV – 1-1~~ V3_15A 22

Equipment Tag:	~~VAV-1-1~~ V3_15A	Completed By:	STM / JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 285	
2	Record the minimum airflow setpoint (CFM). 40 / 120	
3	Record the space heating setpoint (°F). 72	
4	Record the space cooling setpoint (°F). 76	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 73.1	62.8 OA temp.
11	Record the space temperature using a handheld thermometer. ○	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	Slow damper reaction!
13	Record the discharge air temperature from the air handling unit. 50.7	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓ X	damper does not move!
16	Record the damper position (% open). 40%	
17	Record the discharge airflow achieved (CFM). 95	
18	Record the discharge air temperature as read by the BAS (°F). 65.8	wired in place?
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode? x	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	Flow setpoint incorrect
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	~~in~~ does not update in graphics.
25	Record the airflow achieved (CFM). 112 @ 39%	
26	Does the electric heat initiate? ✓	- heater does not stay on!
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F).	

Functional Performance Checklists

~~VAV-1-1~~ V3_1LA Z2

Equipment Tag:	~~VAV-1-1~~ V3_1LA	Completed By:	
Date:		Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 350	
2	Record the minimum airflow setpoint (CFM). 106 / 180	
3	Record the space heating setpoint (°F). 72	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 75.5	
11	Record the space temperature using a handheld thermometer. ○	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 50.7	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 96%	
17	Record the discharge airflow achieved (CFM). 322	
18	Record the discharge air temperature as read by the BAS (°F). 66.8	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ○	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 182 @ 71%	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). 88	

Functional Performance Checklists

~~VAV-1-1~~ V3_18A 26

Equipment Tag:	~~VAV-1-1~~ V3_18A	Completed By:	STM/JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 850	
2	Record the minimum airflow setpoint (CFM). 400	/ no heat?
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 72	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). ✓	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 67.2	/ 44.3 DA temp.
11	Record the space temperature using a handheld thermometer. ◯	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 42.5	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	– 100% airflow not met
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 545	
18	Record the discharge air temperature as read by the BAS (°F). 44.4	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ◯	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow?	modulates to min
25	Record the airflow achieved (CFM). 394 @ 78%	
26	Does the electric heat initiate? NA	
27	Record the number of stages of electric heat energized. NA	
28	Record the discharge air temperature sensor reading (°F). NA	

~~VAV-1-1~~ V3_19A 26

Equipment Tag:	~~VAV-1-1~~ V3_19A	Completed By:	STM / JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 1300	
2	Record the minimum airflow setpoint (CFM). 700 / no heat ? X	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 70	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 73.5 —	no DA temp. / does not reach max airflow S.P too low
11	Record the space temperature using a handheld thermometer. O	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 42.5	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓ 100% airflow not met	
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 895	
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. O	
20	Is the discharge air temperature appropriate for cooling mode? O	
21	Gradually raise the space cooling setpoint. O	
22	Does the supply air damper modulate to reduce supply airflow? O	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓ mods to min	no heat?
25	Record the airflow achieved (CFM). 723 @ 72%	
26	Does the electric heat initiate? NA	
27	Record the number of stages of electric heat energized. X	
28	Record the discharge air temperature sensor reading (°F).	

Functional Performance Checklists

~~VAV-1-1~~ V3_20A Z3

Equipment Tag:	~~VAV-1-1~~ V3_20A	Completed By:	STM / JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	& Airflow S.P hot - in heat what is box is? - 2-Stages - only 76° DA?
1	Record the maximum airflow setpoint (CFM). 450	
2	Record the minimum airflow setpoint (CFM). 200 / 150	
3	Record the space heating setpoint (°F). 70	
4	Record the space cooling setpoint (°F). 75	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 72.7 / 76.4 DA temp	
11	Record the space temperature using a handheld thermometer. ○	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 46.2	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? 100% airflow not met	
16	Record the damper position (% open). 100	
17	Record the discharge airflow achieved (CFM). 199	
18	Record the discharge air temperature as read by the BAS (°F). 61.9	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ○	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? mods to min / htstpt, not displayed correct.	
25	Record the airflow achieved (CFM). 199	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). 78.4	

Functional Performance Checklists

~~VAV-1-1~~ V3-21A Z3

Equipment Tag:	~~VAV-1-1~~ V3-21A	Completed By:	SJM/JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	- airflow not met
1	Record the maximum airflow setpoint (CFM). 250	- heat off ?
2	Record the minimum airflow setpoint (CFM). 100 / 100	
3	Record the space heating setpoint (°F). 74	
4	Record the space cooling setpoint (°F). 78	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). ✓	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? 71.8	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 71.9	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. ✓ 46.5	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? @ 100% max airflow not met	
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 76	
18	Record the discharge air temperature as read by the BAS (°F). 59.5	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ◯	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? No - @ 100% only 76 cfm	
25	Record the airflow achieved (CFM). 76 @ 100%	min cfm not met so E.H. does not energize.
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

Functional Performance Checklists

~~VAV-1-1~~ V3_22A Z4

Equipment Tag:	~~VAV-1-1~~ V3_22A	Completed By:	SJM / JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 1080	Box disabled?
2	Record the minimum airflow setpoint (CFM). 500 / no heat?	
3	Record the space heating setpoint (°F). x	
4	Record the space cooling setpoint (°F). 32 ?	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? no	
7	Is the space temperature sensor communicating with the BAS? no	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. NA	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	
13	Record the discharge air temperature from the air handling unit.	box disabled
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	no adjustments
16	Record the damper position (% open).	available.
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ V3_23A 24

Equipment Tag:	~~VAV-1-1~~ V3_23A	Completed By:	STM / JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	Damper @ ~~0~~ 15%
1	Record the maximum airflow setpoint (CFM). 449	- ~~0~~ cfm ?
2	Record the minimum airflow setpoint (CFM). 150 / no heat?	-
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 76	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 70.2	
11	Record the space temperature using a handheld thermometer. ~~0~~ / no DA temp.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	
13	Record the discharge air temperature from the air handling unit.	~~0~~ cfm
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	Flow stpt. goes
16	Record the damper position (% open).	to min
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	No heat
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV – 1-1~~ V3_24A Z4

Equipment Tag:	~~VAV-1-1~~ V3_24A	Completed By:	STM/JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 350	
2	Record the minimum airflow setpoint (CFM). 350 / No heat?	
3	Record the space heating setpoint (°F). X	
4	Record the space cooling setpoint (°F). 72	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 73.7	– no DA temp
11	Record the space temperature using a handheld thermometer. ○	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	No AH
13	Record the discharge air temperature from the air handling unit. ✓	
14	Lower the zone temperature setpoint to demand maximum cooling. 46.4	
15	Does the supply air damper modulate to the maximum scheduled airflow?	@ 75% –
16	Record the damper position (% open). 75	
17	Record the discharge airflow achieved (CFM). 356	
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ○	
20	Is the discharge air temperature appropriate for cooling mode? X	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	& no heat
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 354 @ 75%	
26	Does the electric heat initiate? NO	
27	Record the number of stages of electric heat energized. NA	
28	Record the discharge air temperature sensor reading (°F). NA	

~~VAV – 1-1~~ V3-25A 24

Equipment Tag:	~~VAV-1-1~~ V3_25A	Completed By:	STM/JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	350
2	Record the minimum airflow setpoint (CFM).	350 / 200
3	Record the space heating setpoint (°F).	68
4	Record the space cooling setpoint (°F).	72
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	x
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	✓
7	Is the space temperature sensor communicating with the BAS?	✓
8	Is the space temperature sensor located such that it is out of the supply airflow?	✓
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	✓
10	Record the space temperature as read by the BAS.	71.3 / 64.8 DA temp
11	Record the space temperature using a handheld thermometer.	○
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	46.5
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	✓ does not meet max!
16	Record the damper position (% open).	100
17	Record the discharge airflow achieved (CFM).	273
18	Record the discharge air temperature as read by the BAS (°F).	58.4
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	○
20	Is the discharge air temperature appropriate for cooling mode?	✓
21	Gradually raise the space cooling setpoint.	✓
22	Does the supply air damper modulate to reduce supply airflow?	✓
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	✓
24	Does the supply air damper maintain the minimum scheduled airflow?	✓ Slow rise?
25	Record the airflow achieved (CFM).	199 @ 90% DA temp = 70.8?
26	Does the electric heat initiate?	✓
27	Record the number of stages of electric heat energized.	2 ~~temp does not rise w/ both stages of heat~~ on
28	Record the discharge air temperature sensor reading (°F).	

~~VAV~~ – 1-1 V3-26A 25

Equipment Tag:	~~VAV-1-1~~ V3-26A	Completed By:	STH / JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 1040	
2	Record the minimum airflow setpoint (CFM). 200 / 400	
3	Record the space heating setpoint (°F). 71	
4	Record the space cooling setpoint (°F). 76	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 73.8 / 67.7 DA temp	
11	Record the space temperature using a handheld thermometer. ○	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 66.4	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓ ~~no~~ does not meet	
16	Record the damper position (% open). 100	
17	Record the discharge airflow achieved (CFM). 640	
18	Record the discharge air temperature as read by the BAS (°F). 65.4	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ○	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 394 @ 53%	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ V3_27A 25

Equipment Tag:	~~VAV-1-1~~ V3_27A	Completed By:	STM / JDB
Date:	12/17	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 990	
2	Record the minimum airflow setpoint (CFM). 470 / 400	
3	Record the space heating setpoint (°F). 71	
4	Record the space cooling setpoint (°F). 75	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 72.8 / 67.7 DA temp	
11	Record the space temperature using a handheld thermometer. O	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 66.4	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	max not meet
16	Record the damper position (% open). 100	
17	Record the discharge airflow achieved (CFM). 500	
18	Record the discharge air temperature as read by the BAS (°F). 68.4	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. O	
20	Is the discharge air temperature appropriate for cooling mode? x	
21	Gradually raise the space cooling setpoint. x	
22	Does the supply air damper modulate to reduce supply airflow? x	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 430 @ 73°6	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F).	

Appendix 8

PSTA HVAC Equipment List

Tag	Location	Model No.	Serial No.	Est. Remaining Life	Notes
AHU-1M	M143	TIBAØ15H41720FA TIC - Ht wheel	MØ3MØØ289		VFD mn: TR1601 1GT4CN1STR1DLF4ØA00CO SN: 0005 19H404 (10HP)
VAV1M1	M154	VCEF05000GOFM 00C00000L4WODO 2B2100	R04H04811A		
VAV1M2	M154	VCEF08000GOFM 00C08000L4WODO 302100	R04H04776A		
VAV1M3	M153	VCCF05000GOFM 00C00000L4WOOO 000DD	R04H04842A		
VAV1M4	M154	VCEF10000GOFM 00C00000L5WOF06 52100	R04H04861A		
VAV1M5	M154	VCEF10000GOFM 00C00000L5WOFI 102100	R04H04862A		
VAV1M6	M151	VCEF04000GOFM 00C00000L4WODO T02100	R04H04863A		
VAV1M7	M143	VCEF05000GOFM 00C00000L4WODO 162100	R04H048___		
VAV1M9	M139	VCEF10000GOFM 00C00000L4WODO 202100	R04H04869A		
VAV1M10	M139	VCEF10000GOFM 00C00000L4WODO 202100	R04H04868A		
VAV1M8	M143				unit label inaccessable

PSTA HVAC Equipment List

Tag	Location	Model No.	Serial No.	Est. Remaining Life	Notes
VAV/M11	M126				Unit ~~tag~~ label inaccessable
VAV/M12	M103				Unit label inaccessable

~~VAV-1-1~~ VH1_1 2_3

Equipment Tag:	~~VAV-1-1~~ VH1_1	Completed By:	STM/JDB
Date:	12/22	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 328	- graphic does not show up
2	Record the minimum airflow setpoint (CFM). 170 /218	- damper @ 19% - 300 cfm S.P. ?
3	Record the space heating setpoint (°F). 71	
4	Record the space cooling setpoint (°F). 71	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 71.0	
11	Record the space temperature using a handheld thermometer. (72)	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 51.0	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 24%	
17	Record the discharge airflow achieved (CFM). 335	
18	Record the discharge air temperature as read by the BAS (°F). 61.0	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. (61.5)	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). ~~231 cfm~~ 218 @ 8%	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). 79.9	

~~VAV-1-1~~ VH1-2 2-3

Equipment Tag:	~~VAV-1-1~~ VH1-2	Completed By:	STM / JDB
Date:	12/22	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 250	
2	Record the minimum airflow setpoint (CFM). 170 / 176	
3	Record the space heating setpoint (°F). 71	68° DA temp – one stage elec. ht.
4	Record the space cooling setpoint (°F). 74 84	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS. 71.3	
11	Record the space temperature using a handheld thermometer. (73)	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 51.0	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 88%	
17	Record the discharge airflow achieved (CFM). 244	
18	Record the discharge air temperature as read by the BAS (°F). 58.6	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. (68.5)	
20	Is the discharge air temperature appropriate for cooling mode? ?	
21	Gradually raise the space cooling setpoint. ?	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓ 85°	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 167 @ 81%	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV – 1-1~~ ~~VH~~ VI-3 Z-2

Equipment Tag:	~~VAV~~-1-1 VI-3	Completed By:	STM / JDB
Date:	12/22	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 299	- damper @ 51%
2	Record the minimum airflow setpoint (CFM). 50	- Flw s.p. @ and airflow not displayed / blank
3	Record the space heating setpoint (°F). NA - no heat	
4	Record the space cooling setpoint (°F). 70	~~Htg~~ Clg displayed @ VAV summary
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). ✓	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 72.4	
11	Record the space temperature using a handheld thermometer. (73)	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. ~~51.0~~ 58.6	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ?	
16	Record the damper position (% open). 50%	
17	Record the discharge airflow achieved (CFM). 240	
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. (67.5)	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. No heat	
24	Does the supply air damper maintain the minimum scheduled airflow? NA - damper pos No change	
25	Record the airflow achieved (CFM). NA	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized. NA	
28	Record the discharge air temperature sensor reading (°F). NA	

~~VAV-1-1~~ VH1-4 2-3

Equipment Tag:	~~VAV-1-1~~ VH1-4	Completed By:	STM/JDB
Date:	12/22	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 690	Box Mode = Unocc.
2	Record the minimum airflow setpoint (CFM). 210 / 300	
3	Record the space heating setpoint (°F). 71	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 70.9	
11	Record the space temperature using a handheld thermometer. (73)	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 51.0	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 98%	
17	Record the discharge airflow achieved (CFM). 680	
18	Record the discharge air temperature as read by the BAS (°F). 60.2	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. (68)	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow?	No – ~~the~~ maintains max. airflow
25	Record the airflow achieved (CFM). 708 @ 97%	@ 690
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2 & 3	
28	Record the discharge air temperature sensor reading (°F). 73.9	

Functional Performance Checklists

~~VAV-1-1~~ VH1_5 2_3

Equipment Tag:	~~VAV-1-1~~ VH1_5	Completed By:	SJM/JDB
Date:	12/22	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 1229	70.6° DA w 2 steps of heat on.
2	Record the minimum airflow setpoint (CFM). 500 /850	
3	Record the space heating setpoint (°F). 71	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 71.7	
11	Record the space temperature using a handheld thermometer. (75)	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 51.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 1151	
18	Record the discharge air temperature as read by the BAS (°F). 59.1	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. (67)	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 840 @ 78%	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). 71.2°	

Functional Performance Checklists

~~VAV~~ – 1-1 VH1-6 2-2

Equipment Tag:	~~VAV~~-1-1 VH1-5	Completed By:	SJM /JDB
Date:	12/22	Company:	
		Equipment Type:	Terminal Unit

Item No	Description		Comment
	Setpoint Verification		
1	Record the maximum airflow setpoint (CFM).	~~1229~~ 150	– Stg 1 heat only –
2	Record the minimum airflow setpoint (CFM).	~~508~~ 50/150	72.1° OA temp
3	Record the space heating setpoint (°F).	71	Stg 2 - turned off in DDC
4	Record the space cooling setpoint (°F).	74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	x	
	Space Sensor Verification		
6	Is the space temperature sensor communicating with the terminal unit?	✓	
7	Is the space temperature sensor communicating with the BAS?	✓	
8	Is the space temperature sensor located such that it is out of the supply airflow?	✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	✓	
10	Record the space temperature as read by the BAS.	72.3	
11	Record the space temperature using a handheld thermometer.	(74)	
	Space Temperature Control		
	Cooling Mode		
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓	
13	Record the discharge air temperature from the air handling unit.	58.7	
14	Lower the zone temperature setpoint to demand maximum cooling.	✓	
15	Does the supply air damper modulate to the maximum scheduled airflow?	~~52%~~ ✓	
16	Record the damper position (% open).	46%	
17	Record the discharge airflow achieved (CFM).	155	
18	Record the discharge air temperature as read by the BAS (°F).	60.3	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	(67)	
20	Is the discharge air temperature appropriate for cooling mode?	✓	
21	Gradually raise the space cooling setpoint.	✓	
22	Does the supply air damper modulate to reduce supply airflow?	✓	
	Heating Mode		
23	Increase the zone heating setpoint to be > current space temperature heating.	✓	
24	Does the supply air damper maintain the minimum scheduled airflow?	✓	
25	Record the airflow achieved (CFM).	~~840 @ 48%~~ 840 @ 48%	
26	Does the electric heat initiate?	✓	
27	Record the number of stages of electric heat energized.	2	
28	Record the discharge air temperature sensor reading (°F).	83.3	

Functional Performance Checklists

~~VAV-1-1~~ VH1-7 | 12? ~~550~~ mismatch. Z-1

Equipment Tag:	~~VAV-1-1~~ VH1-7	Completed By:	JTM / JDB
Date:	12/22	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	Box Mode = Unoccupied
1	Record the maximum airflow setpoint (CFM). 300	- DA temp = 59.9
2	Record the minimum airflow setpoint (CFM). 400 / 301	w/ 2 stages ht on??
3	Record the space heating setpoint (°F). 71	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 69.5	
11	Record the space temperature using a handheld thermometer. (76)	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. (61.1)	
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	Mismatch in program?
16	Record the damper position (% open). 58	
17	Record the discharge airflow achieved (CFM). 305	21 - vs 23
18	Record the discharge air temperature as read by the BAS (°F). (52.2)	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. (81)	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓ ✓	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 303	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2 ?	→ shown as on in DDC controls
28	Record the discharge air temperature sensor reading (°F). 59.5 - No heat energized —	

Functional Performance Checklists

~~VAV-1-1~~ V1-8 2-1

Equipment Tag:	~~VAV-1-1~~ V1-8	Completed By:	SJM / JDB
Date:	12/22	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 500	- no airflow S.P. displayed - no cfm displayed - Damper @ 60% set?
2	Record the minimum airflow setpoint (CFM). 400	
3	Record the space heating setpoint (°F). NA - cool only, no heat	
4	Record the space cooling setpoint (°F). 74°.	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). ✓	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 69.8	
11	Record the space temperature using a handheld thermometer. 74	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 61.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 79	
17	Record the discharge airflow achieved (CFM). 506	no DA temp reading
18	Record the discharge air temperature as read by the BAS (°F). X	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. (61)	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? NO heat	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ VH1-9 2-1

Equipment Tag:	~~VAV-1-1~~ VH1-9	Completed By:	STM / JDB
Date:	12/22	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 975	box set unocc. mode
2	Record the minimum airflow setpoint (CFM). 250 / 270	DA temp = 52.9
3	Record the space heating setpoint (°F). 68	
4	Record the space cooling setpoint (°F). 71	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F) x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 71.1	
11	Record the space temperature using a handheld thermometer. ○ 74.5	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 61.1	
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓ ?	
16	Record the damper position (% open). 97%	
17	Record the discharge airflow achieved (CFM). 941	
18	Record the discharge air temperature as read by the BAS (°F). 52.8°	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. (60)	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM) ~~250~~ 265 @ 99%	
26	Does the electric heat initiate? ✓	- heat does not
27	Record the number of stages of electric heat energized. 2	remain ON
28	Record the discharge air temperature sensor reading (°F). 57.5	

~~VAV – 1-1~~ VH1-10 2-1

Equipment Tag:	~~VAV-1-1~~ VH1-10	Completed By:	STM / JDB
Date:	12/22	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	- 70.3 DA temp w/ 2 stage heat on
1	Record the maximum airflow setpoint (CFM). 500	
2	Record the minimum airflow setpoint (CFM). 125 / 150	* unocc. mode
3	Record the space heating setpoint (°F). 71	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? ✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 70.1	
11	Record the space temperature using a handheld thermometer. ○ 73.5	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 61.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 100	
17	Record the discharge airflow achieved (CFM). 480	
18	Record the discharge air temperature as read by the BAS (°F). 54.6	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ○	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 178 @ 80%	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). ~~68.3~~ 69.3 – too low!	

~~VAV – 1-1~~ VH1_11 Z-1

Equipment Tag:	~~VAV-1-1~~ VH1_11	Completed By:	STM / JDB
Date:	12/22	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	- Box Mode = Unmet - 55.3 DA temp. - Damper @ 100% - 121 cfm - * not met.
1	Record the maximum airflow setpoint (CFM). 300	
2	Record the minimum airflow setpoint (CFM). 50 /150	
3	Record the space heating setpoint (°F). 65	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit? ✓	
7	Is the space temperature sensor communicating with the BAS? ✓	
8	Is the space temperature sensor located such that it is out of the supply airflow? –	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)? ✓	
10	Record the space temperature as read by the BAS. 68.9	
11	Record the space temperature using a handheld thermometer. ◯ 73.5	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 61.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? @ 100% - NO	
16	Record the damper position (% open). 100	
17	Record the discharge airflow achieved (CFM). 146	
18	Record the discharge air temperature as read by the BAS (°F). 55.5	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ◯	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? NO	
25	Record the airflow achieved (CFM). 130 @ 100%	
26	Does the electric heat initiate? Shows up in BAS however no temp ↑	Heaters do not come on!
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). 55.5	

Functional Performance Checklists

~~VAV~~ – 1-1 VH1-12 /7. possible mismatch 2-1

Equipment Tag:	~~VAV-1-1~~ VH1-12	Completed By:	SJM / JDB
Date:	12/22	Company:	
		Equipment Type:	Terminal Unit

Item No	Description		Comment
	Setpoint Verification		- Box mode not shown
1	Record the maximum airflow setpoint (CFM).	468	- 0% damper pos.
2	Record the minimum airflow setpoint (CFM).	104 / 104	- airflow not met - 324 cfm w/104 setpt.
3	Record the space heating setpoint (°F).	71	
4	Record the space cooling setpoint (°F).	74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	x	
	Space Sensor Verification		
6	Is the space temperature sensor communicating with the terminal unit?	✓	
7	Is the space temperature sensor communicating with the BAS?	✓	
8	Is the space temperature sensor located such that it is out of the supply airflow?	✓	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	✓	
10	Record the space temperature as read by the BAS.	72.9	
11	Record the space temperature using a handheld thermometer.	○ 72.5	
	Space Temperature Control		
	Cooling Mode		
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓	* Airflow and S.P. are not displayed correct on BAS
13	Record the discharge air temperature from the air handling unit.	61.1	
14	Lower the zone temperature setpoint to demand maximum cooling.	✓	
15	Does the supply air damper modulate to the maximum scheduled airflow?		
16	Record the damper position (% open).	○	
17	Record the discharge airflow achieved (CFM).	104	
18	Record the discharge air temperature as read by the BAS (°F).	74.6	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	○	
20	Is the discharge air temperature appropriate for cooling mode?	?	
21	Gradually raise the space cooling setpoint.	?	
22	Does the supply air damper modulate to reduce supply airflow?	?	
	Heating Mode		
23	Increase the zone heating setpoint to be > current space temperature heating.	✓	
24	Does the supply air damper maintain the minimum scheduled airflow?	No goes to max?	
25	Record the airflow achieved (CFM).	453 @ 27%	
26	Does the electric heat initiate?	✓	only 55°F DA
27	Record the number of stages of electric heat energized.	2	
28	Record the discharge air temperature sensor reading (°F).	97.1°	

Appendix 9

PSTA HVAC Equipment List

Tag	Location	Model No.	Serial No.	Est. Remaining Life	Notes
VAV2M1	M223	VCEF060006OFM00 C00000L4W0D015 2100	R04H04804A		
VAV2M2	M205	VCEF08000GOFM 00C000 00L4W0D0 352100	R04H04871A		
VAV2M3	M207	VCEF08000GOFM 00C00000 L4W0D0 402100	R04H04774A		
VAV2M4	M211	VCEF06000GOFM 00C00000L4W0D0 152100	R04H04806A		
VAV2M5	M211	VCEF06000GOFM 00C000 00L4W0D0 202100	R04H04636A		
VAV2M6	M212	VCEF06000 GOFM 00C00600L4W0D0 162100	R04H04807A		
VAV2M7	M236	VCEF08000GOFM 00C00000L4W0D0 302100	R04H04781A		
VAV2M8	M236	VCEF012000GOFM 00C00000L4W0D0 302100	R04H04874A		
VAV2M9	M236	VCEF06000GOFM 00C00000L4W0D0 102100	R04H04[illegible] 797A		~~Unit tag not accessable~~
VAV2M10	M215				Unit tag not accessable
VAV2M11	M217	VCEF06000GOFM 00C00000L4W0D0 102100	R04H04794A		

PSTA HVAC Equipment List

Tag	Location	Model No.	Serial No.	Est. Remaining Life	Notes
VAV2M12	M233	VCEF05000 GOFM 00C00000L4WODO 1S2100	R04H04866A		
VAV2M13	M233	VCEF05000GOFM 00C00000L4WODO 1D2100	R04H04831A		
VAV2M14	M221	VCCF08000GOFM 00C00000 L4W000 600000	R04H04814A		
VAV2M15	M223	VCEF06000GOFM 00C00000L4WODO 1S2100	R04H04805A		
VAV2M16	M224	VCEF06000GOFM 00C00000L4WODO 202100	R04H04835A		
VAV2M17	M223	—	—		Unit tag against wall
VAV2M18	M224	VCEF08000GOFM 00C00000L4WODO 302100	R04H04779A		
VAV2M19	M230	VCEF08000GOFM 00C00000L4WODO 202100	R04H04851A		
VAV2M20	M233	VCEF04000GOFM 00C00000L4WODO 102100	R04H04864A		
VAV2M21	M233	VCEF08000GOFM 00C00000L4WODO 1S2100	R04H04787A		
VAV2M22	M233	VCEF10000GOFM 00C00000L4WODO 4S2100	—		Serial # covered

PSTA HVAC Equipment List

Tag	Location	Model No.	Serial No.	Est. Remaining Life	Notes
VAV2M23	M233	VCEF10000 GOFM 00C00000 L4WODO 202100	R04H04870A		
VAV2M24	M234 235	VCEF0800060FM 00C00000 L4WODO 352100	R04H04872A		
VAV2M25	M237	VCEF06000GOFM 00C00000 L4WODO 352100	R04H04876A		
VAV2M26	M237	VCEF05000GOFM 00C00000L4WODO 102100	R04H 04832A		installed in VAV2M28 location
VAV2M27		VCEF06000GOFM 00C0000 0L4WODO 102100	R04H04796A		Door locked Jeff?
VAV2M28	M237	VCEF05000 GOFM 00C00000L4WODO 202100	R04H04877A		installed in VAV2M26 location
VAV2M29	M244	VCEF14000 60FM 00C00000L5WOFO 652100	R04H04878A		
VAV2M30					
VAV2M31	M255	VCCF06000GOFM 00C00000 L4W0000 000600	R04H04790A		
VAV2M32	M252	VCEF08000GOFM 00C00000L4WODO 352100	R04H04873A		
VAV2M33	M237	VCCF10000GOFM 00C00000L4W0000 000000	R04H04853A		

PSTA HVAC Equipment List

Tag	Location	Model No.	Serial No.	Est. Remaining Life	Notes
VAV2M34	M252	VCCF05000G0FM 00C00000L4W000 000000	R04H04845A		
VAV2M35		—	—		unit tag covered
VAV2M36	M230	VCEF08000G0FM 00C00000L4W0D0 3 0 2100	R04H04780A		
VAV2M37		—	—		unit tag covered
VAV2M38		—	—		unit tag covered

28

~~VAV – 1-1~~ VH2-1

Equipment Tag:	~~VAV-1~~-1	*Completed By:*	STM
Date:	1/6	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	NO BOX GRAPHIC. S.P. shown.
1	Record the maximum airflow setpoint (CFM).	300
2	Record the minimum airflow setpoint (CFM).	89 / 250
3	Record the space heating setpoint (°F).	65
4	Record the space cooling setpoint (°F).	68
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	x
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	✓
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	60.5
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	✓
16	Record the damper position (% open).	89%
17	Record the discharge airflow achieved (CFM).	271
18	Record the discharge air temperature as read by the BAS (°F).	61.9
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	○
20	Is the discharge air temperature appropriate for cooling mode?	✓
21	Gradually raise the space cooling setpoint.	✓
22	Does the supply air damper modulate to reduce supply airflow?	✓
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	✓
24	Does the supply air damper maintain the minimum scheduled airflow?	? flow Stpt does not go to Ht.
25	Record the airflow achieved (CFM).	235 @ 80%
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

23

~~VAV-1-1~~ VH2-2

Equipment Tag:	~~VAV-1-1~~	*Completed By:*	SJM
Date:	1/6	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 600	
2	Record the minimum airflow setpoint (CFM). 220 / 265	
3	Record the space heating setpoint (°F). 72	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 58.0	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? NO	
16	Record the damper position (% open). 99%	~~flow~~ flow stpt does not Δ to max
17	Record the discharge airflow achieved (CFM). 451	
18	Record the discharge air temperature as read by the BAS (°F). 58.0	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 271 @ 59%	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV – 1-1~~ VH2.3

Z 3

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 350	
2	Record the minimum airflow setpoint (CFM). 100 1225	
3	Record the space heating setpoint (°F). 71	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. ✓ 60.6	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 343	
18	Record the discharge air temperature as read by the BAS (°F). 58.9	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ○	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. –	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 231 @ 85% – max flow /2 stg heat	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). 82.2.	

~~VAV – 1-1~~ VH2 -4

Z 3

Equipment Tag:	~~VAV-1-1~~	Completed By:	STM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 100	
2	Record the minimum airflow setpoint (CFM). 50 / 10	
3	Record the space heating setpoint (°F). 65	
4	Record the space cooling setpoint (°F). 71	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 60.8	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ?	
16	Record the damper position (% open). 18%	
17	Record the discharge airflow achieved (CFM). 97	
18	Record the discharge air temperature as read by the BAS (°F). 59.0	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. O	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow?	Heat flow set to 0
25	Record the airflow achieved (CFM). 81 @ 18%	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). 88.4°	

~~VAV – 1-1~~ VH2_5

23

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 100	
2	Record the minimum airflow setpoint (CFM). ~~50~~ 50 / 200	
3	Record the space heating setpoint (°F). 75	
4	Record the space cooling setpoint (°F). 78	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 60.6	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 82%	
17	Record the discharge airflow achieved (CFM). 100	
18	Record the discharge air temperature as read by the BAS (°F). 61.8	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓ NO	
25	Record the airflow achieved (CFM). 160 @ 92%	
26	Does the electric heat initiate? — NO	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F). 59.3	

~~VAV-1-1~~ VH2-6

23

Equipment Tag:	~~VAV-1-1~~	*Completed By:*	SJM
Date:	1/6	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 400	
2	Record the minimum airflow setpoint (CFM). 44 / 148	
3	Record the space heating setpoint (°F). 70	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 60.6	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? NO	
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 318	
18	Record the discharge air temperature as read by the BAS (°F). 58.3	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ○	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 163 @ 66%	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2 — ht not on in graphic.	
28	Record the discharge air temperature sensor reading (°F). 77.2	

~~VAV-1-1~~ VH2-7 Z1

Equipment Tag:	~~VAV-1-1~~	*Completed By:*	SJM
Date:	1/6	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 200	
2	Record the minimum airflow setpoint (CFM). 160 / 200	
3	Record the space heating setpoint (°F). 68	
4	Record the space cooling setpoint (°F). 75	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 60.2	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ~~No~~ yes	Stpts displayed wrong.
16	Record the damper position (% open). 98%	
17	Record the discharge airflow achieved (CFM). 200	
18	Record the discharge air temperature as read by the BAS (°F). 62.8	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 193 @ 98%	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 1	
28	Record the discharge air temperature sensor reading (°F). 88.2	

Z1

~~VAV-1-1~~ VH2-8

Equipment Tag:	~~VAV-1-1~~	*Completed By:*	SJM
Date:	1/6	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 350	
2	Record the minimum airflow setpoint (CFM). 100 / 200	
3	Record the space heating setpoint (°F). 68	
4	Record the space cooling setpoint (°F). 73	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 60.2	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 17%	
17	Record the discharge airflow achieved (CFM). 337	
18	Record the discharge air temperature as read by the BAS (°F). 64.2	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ○	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow? –	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. –	
24	Does the supply air damper maintain the minimum scheduled airflow? NO - max airflow stp.	
25	Record the airflow achieved (CFM). 354	
26	Does the electric heat initiate? — ?	Status is yes but graphic not on.
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). 77.2	

Functional Performance Checklists

~~VAV-1-1~~ VH2-9 Z2

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJW
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 400	
2	Record the minimum airflow setpoint (CFM). 200 /120	
3	Record the space heating setpoint (°F). 65	
4	Record the space cooling setpoint (°F). 72	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 65.5	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? Y- stpt. stays @ htg 199	
16	Record the damper position (% open). 99%	
17	Record the discharge airflow achieved (CFM). 392	
18	Record the discharge air temperature as read by the BAS (°F). 61.2	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ✓	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ~~NO - min flow~~ yes	
25	Record the airflow achieved (CFM). 131	
26	Does the electric heat initiate? ? graph. ✓ shows off but heater on 1 stage	
27	Record the number of stages of electric heat energized. 1	
28	Record the discharge air temperature sensor reading (°F). 74.1	

Z 2

~~VAV-1-1~~ VH2_10

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	330
2	Record the minimum airflow setpoint (CFM).	100 / 100
3	Record the space heating setpoint (°F).	68
4	Record the space cooling setpoint (°F).	73
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	X
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	65.5
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	N —
16	Record the damper position (% open).	100%
17	Record the discharge airflow achieved (CFM).	295
18	Record the discharge air temperature as read by the BAS (°F).	63.8
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	✓
20	Is the discharge air temperature appropriate for cooling mode?	—
21	Gradually raise the space cooling setpoint.	—
22	Does the supply air damper modulate to reduce supply airflow?	—
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	✓
24	Does the supply air damper maintain the minimum scheduled airflow?	Y —
25	Record the airflow achieved (CFM).	95 @ 67%
26	Does the electric heat initiate?	NO
27	Record the number of stages of electric heat energized.	Ø
28	Record the discharge air temperature sensor reading (°F).	64.5

Z4

~~VAV-1-1~~ VH2_11

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). ~~100~~ 75	
2	Record the minimum airflow setpoint (CFM). 25 / 100	
3	Record the space heating setpoint (°F). 78	
4	Record the space cooling setpoint (°F). 85	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 60.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 0% ? ———	
17	Record the discharge airflow achieved (CFM). 78	
18	Record the discharge air temperature as read by the BAS (°F). 70.4	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. O	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 95 @ 14%	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. – both shown off but graphic on	
28	Record the discharge air temperature sensor reading (°F). 78.2	

74

~~VAV-1-1~~ VH2_12

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	301
2	Record the minimum airflow setpoint (CFM).	265 /248
3	Record the space heating setpoint (°F).	70
4	Record the space cooling setpoint (°F).	74
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	x
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	60.1
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	✓
16	Record the damper position (% open).	89%
17	Record the discharge airflow achieved (CFM).	290
18	Record the discharge air temperature as read by the BAS (°F).	57.0
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	0
20	Is the discharge air temperature appropriate for cooling mode?	—
21	Gradually raise the space cooling setpoint.	✓
22	Does the supply air damper modulate to reduce supply airflow?	—
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	✓
24	Does the supply air damper maintain the minimum scheduled airflow?	✓
25	Record the airflow achieved (CFM).	252 @ 86%
26	Does the electric heat initiate?	✓
27	Record the number of stages of electric heat energized.	1
28	Record the discharge air temperature sensor reading (°F).	70.0

Z4

~~VAV – 1-1~~ VH2-13

Equipment Tag:	~~VAV-1~~-1	Completed By:	STM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	cannot access through DDC front end.
2	Record the minimum airflow setpoint (CFM).	
3	Record the space heating setpoint (°F).	
4	Record the space cooling setpoint (°F).	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	
13	Record the discharge air temperature from the air handling unit.	
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	not available in DDC
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

27

VAV ~~1-1~~ V2_14

Equipment Tag:	~~VAV-1-1~~	*Completed By:*	SJM
Date:	1/6	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	NO BOX GRAPHIC! Setpoints slow!
1	Record the maximum airflow setpoint (CFM).	799
2	Record the minimum airflow setpoint (CFM).	218 Cool only
3	Record the space heating setpoint (°F).	NA
4	Record the space cooling setpoint (°F).	74
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	X
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	56.7
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	No damp Damper not initiated.
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	no flow list.
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	X

28

~~VAV-1-1~~ VH2_15

Equipment Tag:	~~VAV-1-1~~	Completed By:	SS M
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	NO GRAPHIC! Setpoints ok.
1	Record the maximum airflow setpoint (CFM).	200
2	Record the minimum airflow setpoint (CFM).	100 /148
3	Record the space heating setpoint (°F).	71
4	Record the space cooling setpoint (°F).	75
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	X
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	60.5
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	✓
16	Record the damper position (% open).	99%
17	Record the discharge airflow achieved (CFM).	193
18	Record the discharge air temperature as read by the BAS (°F).	62.7
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	○
20	Is the discharge air temperature appropriate for cooling mode?	✓
21	Gradually raise the space cooling setpoint.	✓
22	Does the supply air damper modulate to reduce supply airflow?	✓
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	✓
24	Does the supply air damper maintain the minimum scheduled airflow?	✓ NO
25	Record the airflow achieved (CFM).	199 @ 100%
26	Does the electric heat initiate?	✓
27	Record the number of stages of electric heat energized.	? both shown off but graphic on
28	Record the discharge air temperature sensor reading (°F).	80.6

28

~~VAV-1-1~~ VH2_16

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	~~NO GRAPHIC~~ OK
1	Record the maximum airflow setpoint (CFM).	300
2	Record the minimum airflow setpoint (CFM).	200 / 218
3	Record the space heating setpoint (°F).	64
4	Record the space cooling setpoint (°F).	68
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	60.5
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	✓?
16	Record the damper position (% open).	100%
17	Record the discharge airflow achieved (CFM).	@ 269
18	Record the discharge air temperature as read by the BAS (°F).	62.4
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	○
20	Is the discharge air temperature appropriate for cooling mode?	-
21	Gradually raise the space cooling setpoint.	-
22	Does the supply air damper modulate to reduce supply airflow?	-
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	✓
24	Does the supply air damper maintain the minimum scheduled airflow?	NO -
25	Record the airflow achieved (CFM).	267 @ 100%
26	Does the electric heat initiate?	✓
27	Record the number of stages of electric heat energized.	? 2
28	Record the discharge air temperature sensor reading (°F).	77.5

27

~~VAV-1-1~~ V2-17

Equipment Tag:	VAV-1-1	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	~~No Box Graphic~~ VAV
1	Record the maximum airflow setpoint (CFM). 394	
2	Record the minimum airflow setpoint (CFM). 155	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. ✓	
14	Lower the zone temperature setpoint to demand maximum cooling. 56.7	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 99%	
17	Record the discharge airflow achieved (CFM). not shown	
18	Record the discharge air temperature as read by the BAS (°F). X	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. 0	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	no heat
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized. NA	
28	Record the discharge air temperature sensor reading (°F).	

27

~~VAV-1-1~~ VH2-16

Equipment Tag:	~~VAV-1-1~~	Completed By:	STM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description ~~NO GRAPHIC~~	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 828	
2	Record the minimum airflow setpoint (CFM). 695 / 350	
3	Record the space heating setpoint (°F). 71	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 56.7	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? NO	
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 390	
18	Record the discharge air temperature as read by the BAS (°F). 56.6	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. C	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? NO	
25	Record the airflow achieved (CFM). 246 @ 89%	
26	Does the electric heat initiate? ~~✗~~ ✓	
27	Record the number of stages of electric heat energized. ✓	no heat shown on
28	Record the discharge air temperature sensor reading (°F). ~~56.9~~ 66.8 —	

27

~~VAV-1-1~~ VH2-19

Equipment Tag:	~~VAV-1-1~~	*Completed By:*	JTM
Date:	1/6	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description ~~NO BOX GRAPHIC!~~	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 536	
2	Record the minimum airflow setpoint (CFM). 370 /300	
3	Record the space heating setpoint (°F). 71	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 56.7	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). 534	
18	Record the discharge air temperature as read by the BAS (°F). ~~56~~ 56.6	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ✓	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 303 @ 83%	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. ~~1~~ 2	
28	Record the discharge air temperature sensor reading (°F). 68.6	

Z4

~~VAV-1-1~~ VH2-20

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	NO GRAPHIC!
1	Record the maximum airflow setpoint (CFM). 330	
2	Record the minimum airflow setpoint (CFM). 150 / 100	
3	Record the space heating setpoint (°F). 69	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 60.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 68%	
17	Record the discharge airflow achieved (CFM). 324	
18	Record the discharge air temperature as read by the BAS (°F). 56.8	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ✓	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). 57.4 — no heat?	

Z 4

~~VAV-1-1~~ VH2_21

Equipment Tag:	~~VAV-1-1~~	Completed By:	STM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description ~~NO GRAPHIC!~~	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 650	
2	Record the minimum airflow setpoint (CFM). 125 / 0	
3	Record the space heating setpoint (°F). 68	
4	Record the space cooling setpoint (°F). 72	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 60.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 100	
17	Record the discharge airflow achieved (CFM). 631	
18	Record the discharge air temperature as read by the BAS (°F). 56.8	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? heat flow s.p @ Ø / stpt not carried in BAS	
25	Record the airflow achieved (CFM). 254 @ 80%	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). 71.8	

Z 2

~~VAV-1-1~~ VH2-22

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	NO GRAPHIC!
1	Record the maximum airflow setpoint (CFM). 450	
2	Record the minimum airflow setpoint (CFM). 299 / 299	
3	Record the space heating setpoint (°F). 71	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 65.5	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 94	
17	Record the discharge airflow achieved (CFM). 436	
18	Record the discharge air temperature as read by the BAS (°F). 66.8	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ✓	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? NO	Stpt or damper does not change.
25	Record the airflow achieved (CFM). 441 @ 92%	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 2	
28	Record the discharge air temperature sensor reading (°F). 96.7	

Functional Performance Checklists

~~VAV-1-1~~ VH2-23 Z2

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	NO GRAPHIC!	Comment
	Setpoint Verification		
1	Record the maximum airflow setpoint (CFM).	1500	
2	Record the minimum airflow setpoint (CFM).	500 / 800	
3	Record the space heating setpoint (°F).	68	
4	Record the space cooling setpoint (°F).	72	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	x	
	Space Sensor Verification		
6	Is the space temperature sensor communicating with the terminal unit?		
7	Is the space temperature sensor communicating with the BAS?		
8	Is the space temperature sensor located such that it is out of the supply airflow?		
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?		
10	Record the space temperature as read by the BAS.		
11	Record the space temperature using a handheld thermometer.		
	Space Temperature Control		
	Cooling Mode		
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓	
13	Record the discharge air temperature from the air handling unit.	65.5	
14	Lower the zone temperature setpoint to demand maximum cooling.	✓	
15	Does the supply air damper modulate to the maximum scheduled airflow?	✓	
16	Record the damper position (% open).	100	
17	Record the discharge airflow achieved (CFM).	1479	
18	Record the discharge air temperature as read by the BAS (°F).	64.5	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	✓	
20	Is the discharge air temperature appropriate for cooling mode?	✓	
21	Gradually raise the space cooling setpoint.	✓	
22	Does the supply air damper modulate to reduce supply airflow?	✓	
	Heating Mode		
23	Increase the zone heating setpoint to be > current space temperature heating.	✓	
24	Does the supply air damper maintain the minimum scheduled airflow?	✓	
25	Record the airflow achieved (CFM).	780 @ 85%	
26	Does the electric heat initiate?	✓	
27	Record the number of stages of electric heat energized.	2	
28	Record the discharge air temperature sensor reading (°F).	64.5 — NO heat!	

~~VAV-1-1~~ VH2-24

Z1

Equipment Tag:	~~VAV-1-1~~	Completed By:	STM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 400	
2	Record the minimum airflow setpoint (CFM). 165 / 280	
3	Record the space heating setpoint (°F). 71	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). ✓	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 60.2	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	setpoint does not update when changed. remains @ min flow
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. X	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint. X	
22	Does the supply air damper modulate to reduce supply airflow? X X	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	Temp Stpt does not chang.
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F). 62.0	

24

~~VAV~~ 1-1 V2_25

Equipment Tag:	VAV-1-1	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 69429 ?	
2	Record the minimum airflow setpoint (CFM). 0	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 60.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? NO change	
16	Record the damper position (% open). 100	
17	Record the discharge airflow achieved (CFM). Not Shown	
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ✓	
20	Is the discharge air temperature appropriate for cooling mode? —	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	no heat
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV~~ – 1-1 V2-26

Z 4

Equipment Tag:	~~VAV~~-1-1	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	NO GRAPHIC!
1	Record the maximum airflow setpoint (CFM). 75	
2	Record the minimum airflow setpoint (CFM). 50	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 60.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? NO	damper does not move.
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). not listed	
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	No heat
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ VM2-27

Z 2

Equipment Tag:	VAV-1-1	Completed By:	STM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification (NO GRAPHIC!)	
1	Record the maximum airflow setpoint (CFM). 119	
2	Record the minimum airflow setpoint (CFM). 44 / 123	
3	Record the space heating setpoint (°F). 71	
4	Record the space cooling setpoint (°F). 72	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 65.5	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ✓	
16	Record the damper position (% open). 3% ?	
17	Record the discharge airflow achieved (CFM). 130	
18	Record the discharge air temperature as read by the BAS (°F). 66.1	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ✓	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? ✓	
25	Record the airflow achieved (CFM). 121	
26	Does the electric heat initiate? 4%	
27	Record the number of stages of electric heat energized. ✓	
28	Record the discharge air temperature sensor reading (°F). 70.7	

~~VAV-1-1~~ V2-28 Z8

Equipment Tag:	~~VAV-1-1~~	Completed By:	STM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 398	
2	Record the minimum airflow setpoint (CFM). 273	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 60.5	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? No	damper does not move
16	Record the damper position (% open). 100	
17	Record the discharge airflow achieved (CFM). not listed	
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	No heat
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

Z 8

~~VAV-1-1~~ VH2-29

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 998	
2	Record the minimum airflow setpoint (CFM). 220 /449	
3	Record the space heating setpoint (°F). 65	
4	Record the space cooling setpoint (°F). 68	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). ✓	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 60.5	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? Yes	
16	Record the damper position (% open). 54%	
17	Record the discharge airflow achieved (CFM). 1023	
18	Record the discharge air temperature as read by the BAS (°F). 61.0	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. —	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? No - max stpt used	
25	Record the airflow achieved (CFM). 1038 @ 54%	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F). ~~82.7~~ 82.1	

Z 8

~~VAV-1-1~~ V2.31

Equipment Tag:	~~VAV-1-1~~	*Completed By:*	STM
Date:	1/6	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 140	
2	Record the minimum airflow setpoint (CFM). 140	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 60.5	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? No setpoint 1s6.	
16	Record the damper position (% open). 71%	
17	Record the discharge airflow achieved (CFM). not listed	
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ✓	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	no htg
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ VH2-32

21

Equipment Tag:	~~VAV-1-1~~	*Completed By:*	SSM
Date:	1/6	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 410	
2	Record the minimum airflow setpoint (CFM). 165 / 269	
3	Record the space heating setpoint (°F). 71	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 60.2	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? ? Flow stpt @ 550	
16	Record the damper position (% open). 100	
17	Record the discharge airflow achieved (CFM). 549	
18	Record the discharge air temperature as read by the BAS (°F). 59.9	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. —	
20	Is the discharge air temperature appropriate for cooling mode? —	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? Y	
25	Record the airflow achieved (CFM). 278 @ 83%	
26	Does the electric heat initiate? ✓	
27	Record the number of stages of electric heat energized. 1	
28	Record the discharge air temperature sensor reading (°F). 73.8	

~~VAV-1-1~~ V2-33

Z2

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 1365	
2	Record the minimum airflow setpoint (CFM). 200	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 65.5	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? NO – 100%	
16	Record the damper position (% open). 100	
17	Record the discharge airflow achieved (CFM). not listed	
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. X	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	no heat
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

Z1

~~VAV – 1-1~~ V2-34

Equipment Tag:	~~VAV-1-1~~	*Completed By:*	STM
Date:	1/6	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 500	
2	Record the minimum airflow setpoint (CFM). 100	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 74	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 60.2	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? NO – 100% set!	
16	Record the damper position (% open). 100	
17	Record the discharge airflow achieved (CFM). Not listed	
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. O	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	no heat
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

Functional Performance Checklists

VAV-1-1 VH2-35 / 36 / 37 all the same conditions.

Equipment Tag:	~~VAV-1-1~~	*Completed By:*	JJH
Date:	1/6	*Company:*	
		Equipment Type:	Terminal Unit

Clicking on Box Tag takes you to an empty points list.

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	Not accessible through DDC frontend!
2	Record the minimum airflow setpoint (CFM).	
3	Record the space heating setpoint (°F).	
4	Record the space cooling setpoint (°F).	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	
13	Record the discharge air temperature from the air handling unit.	
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	NO testing
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	not available.
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ V2-38

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 750	
2	Record the minimum airflow setpoint (CFM). 500	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 70	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. ○	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? no - set @ 91%	
16	Record the damper position (% open). 71	
17	Record the discharge airflow achieved (CFM). not listed	
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ○	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	no heat
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

Appendix 10

PSTA HVAC Equipment List

Tag	Location	Model No.	Serial No.	Est. Remaining Life	Notes
VAV3M1		VCCF 10006GOFM 00C000002L4W000 000000	R04H04857A		
VAV3M2		VCCF 10000 GOFM 00C000002L4W000 000000	—		
VAV3M3		VCWF06000GOFM 00C00001L4W000 000000	R04H04881A		
VAV3M4		VCWF08000GOFM 00C00002L4W000 000000	R04H04882A		
VAV3M5		VCWF10000GOFM 00C00002L4W000 000000	R04H04883A		

~~VAV-1-1~~ V3_1

Equipment Tag:	~~VAV-1-1~~	*Completed By:*	SJM
Date:	1/6	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification (Graphic is zoomed out?)	
1	Record the maximum airflow setpoint (CFM). 924	
2	Record the minimum airflow setpoint (CFM). 200 / 0	
3	Record the space heating setpoint (°F). 69	
4	Record the space cooling setpoint (°F). 69	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 62.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? NO	
16	Record the damper position (% open). 99	
17	Record the discharge airflow achieved (CFM). 448	
18	Record the discharge air temperature as read by the BAS (°F). Not given	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. 0	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating. ✓	
24	Does the supply air damper maintain the minimum scheduled airflow? NO	
25	Record the airflow achieved (CFM). 216	
26	Does the electric heat initiate? 82°	
27	Record the number of stages of electric heat energized. NO	
28	Record the discharge air temperature sensor reading (°F). NA	

~~VAV-1-1~~ V3-2

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	no access from DDC front end! empty points list.
2	Record the minimum airflow setpoint (CFM).	
3	Record the space heating setpoint (°F).	
4	Record the space cooling setpoint (°F).	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	62.1
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	no →
16	Record the damper position (% open).	0%
17	Record the discharge airflow achieved (CFM).	159
18	Record the discharge air temperature as read by the BAS (°F).	NA
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	empty points list
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

Functional Performance Checklists

~~VAV-1-1~~ V3_3

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 650	
2	Record the minimum airflow setpoint (CFM). 500	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). NA	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 62.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? NO	
16	Record the damper position (% open). 100	
17	Record the discharge airflow achieved (CFM). 498	
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ V3_4

Equipment Tag:	~~VAV-1-1~~	Completed By:	STM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	no access from DDC frontend! Empty points list.
2	Record the minimum airflow setpoint (CFM).	
3	Record the space heating setpoint (°F).	
4	Record the space cooling setpoint (°F).	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	✓
13	Record the discharge air temperature from the air handling unit.	62.1
14	Lower the zone temperature setpoint to demand maximum cooling.	✓
15	Does the supply air damper modulate to the maximum scheduled airflow?	NO
16	Record the damper position (% open).	67
17	Record the discharge airflow achieved (CFM).	430
18	Record the discharge air temperature as read by the BAS (°F).	NA
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	0
20	Is the discharge air temperature appropriate for cooling mode?	✓
21	Gradually raise the space cooling setpoint.	✓
22	Does the supply air damper modulate to reduce supply airflow?	✓
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

Empty points list.

~~VAV-1-1~~ V3_5

Equipment Tag:	~~VAV-1-1~~	*Completed By:*	SJM
Date:	1/6	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 998	
2	Record the minimum airflow setpoint (CFM). 148	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 68	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode. ✓	
13	Record the discharge air temperature from the air handling unit. 62.1	
14	Lower the zone temperature setpoint to demand maximum cooling. ✓	
15	Does the supply air damper modulate to the maximum scheduled airflow? No —	
16	Record the damper position (% open). 100%	
17	Record the discharge airflow achieved (CFM). not listed	
18	Record the discharge air temperature as read by the BAS (°F). NA	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer. ○	
20	Is the discharge air temperature appropriate for cooling mode? ✓	
21	Gradually raise the space cooling setpoint. ✓	
22	Does the supply air damper modulate to reduce supply airflow? ✓	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

Appendix 11

PSTA HVAC Equipment List

Tag	Location	Model No.	Serial No.	Est. Remaining Life	Notes
ERU-1	M255	Thycurb mm. TVG475 Mfg 7/19/04	C004-7592-1		Turned off! Not running.
AHU-2M	M255	TIBA047H41720FO Trane	M03M00290		
P-7	M255	Motor: Baldor Superfe 15hp. / EM2513T 254T frame	—		No VFD. P-7 makes noise! ~~causing~~ vibration in piping to AHU-2M bearings?
P-8	M255	(1 P-7	—		No VFD. good.
RF-1M	M255	Greenheck BSQ-420-100-X	04102215		NO VFD. no vibration isolators - unit is shaking bldg.
AHU-3M	M248	Trane MCCB010UA0A0UA	K04D61819		
AHU-4M	M249	Trane MCCB008UA0A0UB	K04D60840		no control! — no setpoints. all VAV zones are cool only
VAV4M8	M249	Damper only / Niagra	LX-VAVRF-1		
VAV4M-1	M187	Dampers / Belimo Act.	NA		
VAV-4M-3	M187	Damper / Belimo Act.	NA		
-4M4 -4M5 -4M6	M187 M184 M187				
4M7	M188				

Radiant heat panels are in training office M181

~~VAV – 1-1~~ V4_1

Equipment Tag:	~~VAV-1-1~~	*Completed By:*	SJM
Date:	1/6	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 64	
2	Record the minimum airflow setpoint (CFM). 64	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 64	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	
13	Record the discharge air temperature from the air handling unit.	
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ V4-2

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 66	
2	Record the minimum airflow setpoint (CFM). 66	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 66	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	
13	Record the discharge air temperature from the air handling unit.	
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ V4_3

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 66	
2	Record the minimum airflow setpoint (CFM). 66	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 66	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). X	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	
13	Record the discharge air temperature from the air handling unit.	
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ V4_4

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM).	Not Found / Listed on DDC
2	Record the minimum airflow setpoint (CFM).	
3	Record the space heating setpoint (°F).	
4	Record the space cooling setpoint (°F).	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	
13	Record the discharge air temperature from the air handling unit.	
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

Functional Performance Checklists

~~VAV-1-1~~ V4-5

Equipment Tag:	~~VAV-1-1~~	Completed By:	SJM
Date:	~~8~~ 1/6	Company:	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 64	
2	Record the minimum airflow setpoint (CFM). 64	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 64	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). x	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	
13	Record the discharge air temperature from the air handling unit.	
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

~~VAV-1-1~~ V4-6

Equipment Tag:	~~VAV-1-1~~	*Completed By:*	JJM
Date:	1/6	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 67	
2	Record the minimum airflow setpoint (CFM). 67	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 67	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F).	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	
13	Record the discharge air temperature from the air handling unit.	
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	

Functional Performance Checklists

~~VAV~~ – 1-1 V4_1

Equipment Tag:	~~VAV-1-1~~	*Completed By:*	STM
Date:	1/6	*Company:*	
		Equipment Type:	Terminal Unit

Item No	Description	Comment
	Setpoint Verification	
1	Record the maximum airflow setpoint (CFM). 0	
2	Record the minimum airflow setpoint (CFM). 0	
3	Record the space heating setpoint (°F). NA	
4	Record the space cooling setpoint (°F). 0	
5	Record the deadband between minimum air valve position and activation of the reheat coil (°F). ✓	
	Space Sensor Verification	
6	Is the space temperature sensor communicating with the terminal unit?	
7	Is the space temperature sensor communicating with the BAS?	
8	Is the space temperature sensor located such that it is out of the supply airflow?	
9	Is the space temperature sensor located such that it is away from external heat sources (coffee pot, Computer monitor, etc)?	
10	Record the space temperature as read by the BAS.	
11	Record the space temperature using a handheld thermometer.	
	Space Temperature Control	
	Cooling Mode	
12	Verify that the air handling unit serving this unit is in "Occupied" mode.	
13	Record the discharge air temperature from the air handling unit.	
14	Lower the zone temperature setpoint to demand maximum cooling.	
15	Does the supply air damper modulate to the maximum scheduled airflow?	
16	Record the damper position (% open).	
17	Record the discharge airflow achieved (CFM).	
18	Record the discharge air temperature as read by the BAS (°F).	
19	Record the discharge air temperature at the supply diffuser with an infrared thermometer.	
20	Is the discharge air temperature appropriate for cooling mode?	
21	Gradually raise the space cooling setpoint.	
22	Does the supply air damper modulate to reduce supply airflow?	
	Heating Mode	
23	Increase the zone heating setpoint to be > current space temperature heating.	
24	Does the supply air damper maintain the minimum scheduled airflow?	
25	Record the airflow achieved (CFM).	
26	Does the electric heat initiate?	
27	Record the number of stages of electric heat energized.	
28	Record the discharge air temperature sensor reading (°F).	