Report By:
United T&B
7013 Flagler Rd,
Nordland, WA 98358.

For :
National TAB
1329 E.Kemper Rd,
Suite 4210
Cincinnati, OH 45246.

NATIONAL TAB

Comfort. Under control.

Report: TAB REPORT

Function: Test, Adjust, & Balance

Date: 03/29/2023

PROJECT

03-27-23 JOIN PARACHUTE

510 N 14TH STREET

KINNGSVILLE , TX 78363

National TAB

Project Summary

The summary below provides a quick understanding of our scope of work and general testing procedures. Enclosed in the report is further detail about your building performance including recommendations, asset data, and pictures. Our focus is to work with the trades to remedy any issues or deficiencies during the actual field balancing and not after the balancing has occurred to achieve a positive environment and outcome. The level of success is determined by the availability of the trades, possible parts needed, or time constraints.

RTU's (Roof Top Units) w/ Diffusers

Each of the RTU's were measured at their terminal devices or via traverse to establish a total flow for that unit. Each RTU was adjusted to within tolerance of the engineer's design flow. Each outlet was then adjusted to within tolerance of the design flow. Outside air was measured by reading the intake air opening with a velocity grid and multiplying by the free area. The outside air damper was adjusted until the airflow was within the design requirements. Any equipment that fell outside of that tolerance is noted throughout the report.

General Exhaust Fans w/ Grilles

The general exhaust fans were measured by reading each air device with a flow hood. The total airflow for each fan is equivalent to the sum of these readings. Fan speed was then adjusted so that the airflow was within tolerance of design. Each terminal device was balanced to within tolerance of the design volume using the installed volume dampers. Any equipment that fell outside of this tolerance is noted throughout the report.

Final Building Tests

After completing the test and balance the final building pressure was measured. It was confirmed that the building pressure fell within acceptable tolerances and that the pressure measurement coincides with the actual and design net airflow. Any deviations from these standards are noted throughout the report.

Equipment Comment Log

System / Unit Name	Notes / Logs
RTU-01	Unit is performing at 116% with sheave is full open and VFD limited to 40 Hz.
RTU-02	Outside air was not functioning at the time of testing.
RTU-03	Outside air is operating at 321% of design. There is no outside air damper installed, to adjust the total airflow.
RTU-03/S-03	Wingnut is missing on the damper handle. Damper should be full open.
RTU-04	Outside air is operating at 179% of design. There is no outside air damper installed, to adjust the total airflow.
RTU-04	Unit is operating at 122% of design airflow. Setting the outside air will likely lower the unit total.
RTU-04/S-01	Outlet is operating at 152% of design. There is no damper installed.
RTU-04/R-01	Return outlet is operating at 26% of design, ductwork is undersized at 6inch and not 10inch.
RTU-05	Outsize air controller is not installed, damper is closed.
RTU-05	Unit is operating at 86% of design. Opening the outside air damper may increase the unit total airflow.
EF-02	Fan is operating at 61% of design. The wiring runs through the backdraft and may be limiting the airflow as a result.
EF-02	Fan and grille design differ, fan may be undersized for the grille design.
EF-04	Fan is operating at 72% of design. The wiring runs through the backdraft and may be limiting the airflow as a result.

Air Apparatus

SYSTEM/UNIT: RTU-01

Tested By: Armon Scott
Date: 3/16/2023

Design Airflow (CFM)	
Design Total	2880
Design Grille Total	3000
Design Return	2650
Design Min O/A	230

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	Not Provided
Submittal Airflow	Not Provided
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	2-3/4
Submittal BHP	Not Provided
Filter MERV Rating (Sched/Sub)	2

Design Static Pressures (in wg)	
Design Ext SP	.75
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	Not Provided

Design Temperatures (°F)	
RTU-01/Cooling	
Des. Ent. DB (°F)	Not Listed
Des. Ent. WB (°F)	-
Design LAT DB (°F)	-
Design LAT WB (°F)	-
RTU-01/Heating	
Design EAT DB (°F)	Not Listed
Design LAT DB (°F)	-

Filter Data	
Condition	Partially Loaded
Filter Type	Pleated
MERV Rating	8
Filter Size Set 1 (in)	20/20/2
# Filters Set 1	4
Filter Size Set 2 (in)	-
# Filters Set 2	-

Motor Nameplate Data	
Motor Make	Baldor
Motor Frame	56HZ
Motor HP	2.40
Motor RPM	1750
Motor Volts	208
Motor Phase	3
Motor Amps	7.7
Motor S.F.	1.15
Motor % PF	70
Motor % Eff.	86.5

Final Airflow (CFM)	
Actual Total CFM	3472
Actual Grille Total CFM	3472
Actual Return Air CFM	3224
Actual Min O/A CFM	248
Fan CFM Test Method	Supply Outlet Total
OA Method/Instrument	Face Velocity/RVA
OA Ak (sq ft)	3.830
OA Damper Position	8% Open
RA Damper Position	92% Open
RTU-01/Heating	
Actual Heating CFM	3472

Unit Data	
Make (tag)	Johnson Controls
Model # (tag)	ZYG09D2B3AB1B22A4A2
Serial # (tag)	NN2283028
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	11.1
Clg Coil Vel (FPM)	313
Fan Service	Supply
Fan Type	Centrifugal (AF)
Fan Discharge	Downblast
Fan Arrangement	DWDI
RTU-01/Heating	
Coil Location	Unit / Discharge

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	Not Provided

Fan Data	
Actual Fan RPM/Speed	812
Actual Motor RPM	1780

Electrical Data	
Measurement Method	VFD Display
Motor Volts 1	302
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	4.7
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	40.00
Approx. BHP	2.1
Corr. Nameplate Amps	5.3
Starter Data	Not Applicable
VFD Reference	-

Air Apparatus

SYSTEM/UNIT: RTU-01

Tested By: Armon Scott
Date: 3/16/2023

Motor Nameplate Data	
Other Motor Data	-

Drive Data	
Drive Type	Belt Drive
Sheave Type	Variable
Fan Sheave Make	Powerdrive
Fan Shv Mod# or Size (in)	AK74
Fan Sheave Bore (in)	1
Motor Sheave Make	Browning
Mtr Shv Mod# or Size (in)	1VL44
Motor Sheave Bore (in)	5/8
VP Range	Full Open
Center Distance (in)	16.5
No of Belts	1
Belt Make	Browning
Belt Size	A48
Other Data	-

Actual Temperatures (°F)	
RTU-01/Cooling	
Outside Air DB	81.9
Outside Air WB	72.5
Entering Air DB	78.5
Entering Air WB	70.8
Leaving Air DB	60.1
Leaving Air WB	58.0
RTU-01/Heating	
Entering Air DB	-
Leaving Air DB	-

Motor Make Photo:

Name: motor.jpg
Captured: 3/16/2023 10:35 AM
Caption:

Log:

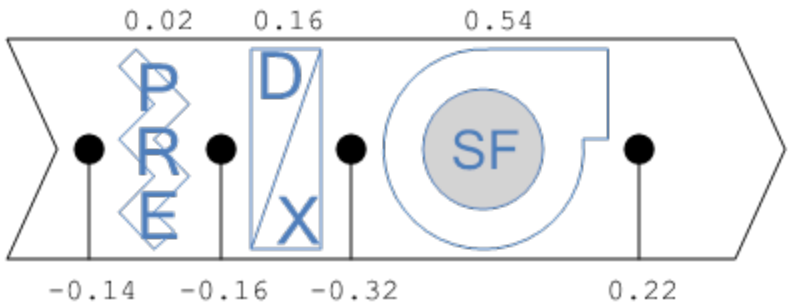
RTU-01	Unit is performing at 116% with sheave is full open and VFD limited to 40 Hz.

Air Apparatus

SYSTEM/UNIT: RTU-01/Static Profile

Tested By: Armon Scott
Date: 3/16/2023

Static Pressure Profile



RTU-01 Supply Outlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
S-01	102 NEW DONOR	CD	12	425	413	453	107	Capture Hood	1.000	1.000	453
S-02	101 GREET/CHECKIN	CD	12	425	471	481	113	Capture Hood	1.000	1.000	481
S-03	101 GREET/CHECKIN	CD	12	425	560	495	116	Capture Hood	1.000	1.000	495
S-04	101 GREET/CHECKIN	CD	10	315	373	379	120	Capture Hood	1.000	1.000	379
S-05	101 GREET/CHECKIN	CD	10	315	362	368	117	Capture Hood	1.000	1.000	368
S-06	101 GREET/CHECKIN	CD	10	315	325	350	111	Capture Hood	1.000	1.000	350
S-07	119 DONOR FLOOR	CD	10	260	287	315	121	Capture Hood	1.000	1.000	315
S-08	119 DONOR FLOOR	CD	10	260	315	326	125	Capture Hood	1.000	1.000	326
S-09	119 DONOR FLOOR	CD	10	260	381	305	117	Capture Hood	1.000	1.000	305
	Totals:	-	-	**3000**	**3487**	**3472**	**116**	-	-	-	-

Air Apparatus

SYSTEM/UNIT: RTU-02

Tested By: Armon Scott
Date: 3/16/2023

Design Airflow (CFM)	
Design Total	960
Design Grille Total	960
Design Return	825
Design Min O/A	135

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	Not Provided
Submittal Airflow	Not Provided
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	3/4
Submittal BHP	Not Provided
Filter MERV Rating (Sched/Sub)	2

Design Static Pressures (in wg)	
Design Ext SP	.75
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	Not Provided

Design Temperatures (°F)	
RTU-02/Cooling	
Des. Ent. DB (°F)	Not Listed
Des. Ent. WB (°F)	-
Design LAT DB (°F)	-
Design LAT WB (°F)	-
RTU-02/Heating	
Design EAT DB (°F)	Not Listed
Design LAT DB (°F)	-

Filter Data	
Condition	Partially Loaded
Filter Type	Disposable
MERV Rating	8
Filter Size Set 1 (in)	16/25/2
# Filters Set 1	2
Filter Size Set 2 (in)	-
# Filters Set 2	-

Motor Nameplate Data	
Motor Make	No Access - Embedded Motor
Motor Frame	-
Motor HP	-
Motor RPM	-
Motor Volts	208
Motor Phase	1
Motor Amps	7.1
Motor S.F.	-
Motor % PF	-
Motor % Eff.	-

Final Airflow (CFM)	
Actual Total CFM	1031
Actual Grille Total CFM	1031
Actual Return Air CFM	1031
Actual Min O/A CFM	0
Fan CFM Test Method	Supply Outlet Total
OA Method/Instrument	Not Applicable
OA Ak (sq ft)	Not Applicable
OA Damper Position	Closed
RA Damper Position	100% Open
RTU-02/Heating	
Actual Heating CFM	1031

Unit Data	
Make (tag)	Carrier
Model # (tag)	48GCFM05A2A5A0A0A0
Serial # (tag)	0322C06418
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	5.6
Clg Coil Vel (FPM)	184
Fan Service	Supply
Fan Type	Propeller
Fan Discharge	Downblast
Fan Arrangement	Propeller
RTU-02/Heating	
Coil Location	Unit / Discharge

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	Not Provided

Fan Data	
Actual Fan RPM/Speed	C50
Actual Motor RPM	-

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	212
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	3.0
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.00
Approx. BHP	
Corr. Nameplate Amps	7.0
Starter Data	Not Applicable
VFD Reference	-

Air Apparatus

SYSTEM/UNIT: RTU-02

Tested By: Armon Scott
Date: 3/16/2023

Motor Nameplate Data	
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in)	-
VP Range	-
Center Distance (in)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Actual Temperatures (°F)	
RTU-02/Cooling	
Outside Air DB	81.9
Outside Air WB	72.5
Entering Air DB	77.3
Entering Air WB	70.6
Leaving Air DB	58.3
Leaving Air WB	55.0
RTU-02/Heating	
Entering Air DB	-
Leaving Air DB	-

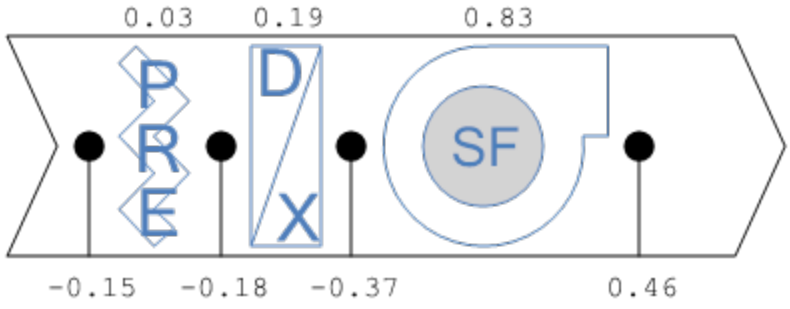
Log:

RTU-02	Outside air was not functioning at the time of testing.

SYSTEM/UNIT: RTU-02/Static Profile

Tested By: Armon Scott
Date: 3/16/2023

Static Pressure Profile



Air Apparatus

RTU-02 Supply Outlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
S-01		CD	8	195	273	215	110	Capture Hood	1.000	1.000	215
S-02	105 VIEWING	CD	8	225	229	235	104	Capture Hood	1.000	1.000	235
S-03	113 QUEING	CD	10	270	288	294	109	Capture Hood	1.000	1.000	294
S-04	113 QUEING	CD	10	270	264	287	106	Capture Hood	1.000	1.000	287
	Totals:	**-**	**-**	**960**	**1054**	**1031**	**107**	**-**	**-**	**-**	**-**

Air Apparatus

SYSTEM/UNIT: RTU-03

Tested By: Armon Scott
Date: 3/21/2023

Design Airflow (CFM)	
Design Total	1680
Design Grille Total	1680
Design Return	1445
Design Min O/A	235

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	Not Provided
Submittal Airflow	Not Provided
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	1
Submittal BHP	Not Provided
Filter MERV Rating (Sched/Sub)	2

Design Static Pressures (in wg)	
Design Ext SP	.75
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	Not Provided

Design Temperatures (°F)	
RTU-03/Cooling	
Des. Ent. DB (°F)	Not Listed
Des. Ent. WB (°F)	-
Design LAT DB (°F)	-
Design LAT WB (°F)	-
RTU-03/Heating	
Design EAT DB (°F)	Not Listed
Design LAT DB (°F)	Not Listed

Filter Data	
Condition	Partially Loaded
Filter Type	Disposable
MERV Rating	8
Filter Size Set 1 (in)	25/20/2
# Filters Set 1	1
Filter Size Set 2 (in)	12/25/2
# Filters Set 2	1

Motor Nameplate Data	
Motor Make	No Access - Embedded Motor
Motor Frame	Not Listed
Motor HP	-
Motor RPM	-
Motor Volts	208
Motor Phase	3
Motor Amps	7.6
Motor S.F.	-
Motor % PF	-
Motor % Eff.	-

Final Airflow (CFM)	
Actual Total CFM	1631
Actual Grille Total CFM	1631
Actual Return Air CFM	876
Actual Min O/A CFM	755
Fan CFM Test Method	Supply Outlet Total
OA Method/Instrument	Face Velocity/RVA
OA Ak (sq ft)	1.300
OA Damper Position	Not Applicable
RA Damper Position	100% Open
RTU-03/Heating	
Actual Heating CFM	1631

Unit Data	
Make (tag)	Coleman
Model # (tag)	ZE060H10A2A1AAA1A2
Serial # (tag)	N2A2931257
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	4.9
Clg Coil Vel (FPM)	333
Fan Service	Supply
Fan Type	Centrifugal (BI)
Fan Discharge	Downblast
Fan Arrangement	DWDI
RTU-03/Heating	
Coil Location	Unit / Discharge

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	Not Provided

Fan Data	
Actual Fan RPM/Speed	Medium
Actual Motor RPM	Not Accessible

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	No Access to Measure
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	No Safe Access
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.00
Approx. BHP	
Corr. Nameplate Amps	
Starter Data	Not Applicable
VFD Reference	-

Air Apparatus

SYSTEM/UNIT: RTU-03

Tested By: Armon Scott
Date: 3/21/2023

Motor Nameplate Data	
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in)	-
VP Range	-
Center Distance (in)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

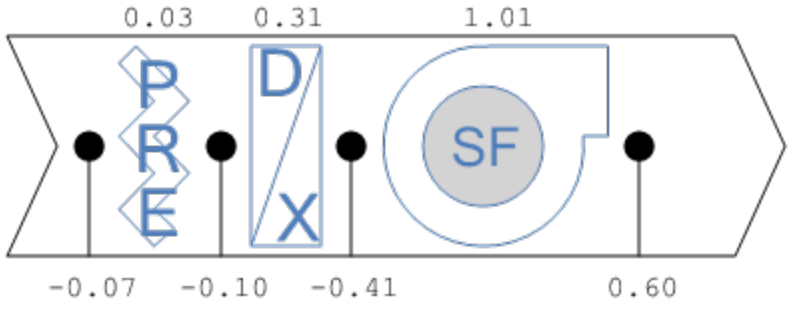
Actual Temperatures (°F)	
RTU-03/Cooling	
Outside Air DB	86.6
Outside Air WB	74.0
Entering Air DB	81.5
Entering Air WB	71.6
Leaving Air DB	62.6
Leaving Air WB	59.3
RTU-03/Heating	
Entering Air DB	-
Leaving Air DB	-

Log:		
	RTU-03	Outside air is operating at 321% of design. There is no outside air damper installed, to adjust the total airflow.

SYSTEM/UNIT: RTU-03/Static Profile

Tested By: Armon Scott
Date: 3/16/2023

Static Pressure Profile



Air Apparatus

RTU-03 Supply Outlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
S-01	119 DONOR FLOOR	CD	10	280	362	274	98	Capture Hood	1.000	1.000	274
S-02	119 DONOR FLOOR	CD	10	280	412	274	98	Capture Hood	1.000	1.000	274
S-03*	119 DONOR FLOOR	CD	10	280	179	273	98	Capture Hood	1.000	1.000	273
S-04	119 DONOR FLOOR	CD	10	280	336	281	100	Capture Hood	1.000	1.000	281
S-05	119 DONOR FLOOR	CD	10	280	309	252	90	Capture Hood	1.000	1.000	252
S-06	119 DONOR FLOOR	CD	10	280	293	277	99	Capture Hood	1.000	1.000	277
	Totals:	-	-	**1680**	**1891**	**1631**	**97**	-	-	-	-

Log:		
	RTU-03/S-03	Wingnut is missing on the damper handle. Damper should be full open.

Air Apparatus

SYSTEM/UNIT: RTU-04

Tested By: Armon Scott
Date: 3/21/2023

Design Airflow (CFM)	
Design Total	1280
Design Grille Total	1270
Design Return	1010
Design Min O/A	270

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	Not Provided
Submittal Airflow	Not Provided
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	1
Submittal BHP	Not Provided
Filter MERV Rating (Sched/Sub)	2

Design Static Pressures (in wg)	
Design Ext SP	.75
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	Not Provided

Design Temperatures (°F)	
RTU-04/Cooling	
Des. Ent. DB (°F)	Not Listed
Des. Ent. WB (°F)	-
Design LAT DB (°F)	-
Design LAT WB (°F)	-
RTU-04/Heating	
Design EAT DB (°F)	Not Listed
Design LAT DB (°F)	-

Filter Data	
Condition	Partially Loaded
Filter Type	Disposable
MERV Rating	8
Filter Size Set 1 (in)	25/20/2
# Filters Set 1	1
Filter Size Set 2 (in)	12/25/2
# Filters Set 2	1

Motor Nameplate Data	
Motor Make	No Access - Embedded Motor
Motor Frame	Not Listed
Motor HP	-
Motor RPM	-
Motor Volts	208
Motor Phase	3
Motor Amps	7.6
Motor S.F.	-
Motor % PF	-
Motor % Eff.	-

Final Airflow (CFM)	
Actual Total CFM	1554
Actual Grille Total CFM	1554
Actual Return Air CFM	1071
Actual Min O/A CFM	483
Fan CFM Test Method	Supply Outlet Total
OA Method/Instrument	Face Velocity/RVA
OA Ak (sq ft)	1.300
OA Damper Position	Not Applicable
RA Damper Position	100% Open
RTU-04/Heating	
Actual Heating CFM	1554

Unit Data	
Make (tag)	Coleman
Model # (tag)	ZE060H10A2A1AAA1A2
Serial # (tag)	N2A2931258
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	4.9
Clg Coil Vel (FPM)	317
Fan Service	Supply
Fan Type	Centrifugal (BI)
Fan Discharge	Downblast
Fan Arrangement	DWDI
RTU-04/Heating	
Coil Location	Unit / Discharge

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	Not Provided

Fan Data	
Actual Fan RPM/Speed	Low
Actual Motor RPM	-

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	No Access to Measure
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	No Safe Access
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.00
Approx. BHP	
Corr. Nameplate Amps	
Starter Data	Not Applicable
VFD Reference	-

Air Apparatus

SYSTEM/UNIT: RTU-04

Tested By: Armon Scott
Date: 3/21/2023

Motor Nameplate Data	
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in)	-
VP Range	-
Center Distance (in)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Actual Temperatures (°F)	
RTU-04/Cooling	
Outside Air DB	86.4
Outside Air WB	74.0
Entering Air DB	81.2
Entering Air WB	71.1
Leaving Air DB	60.9
Leaving Air WB	57.7
RTU-04/Heating	
Entering Air DB	-
Leaving Air DB	-

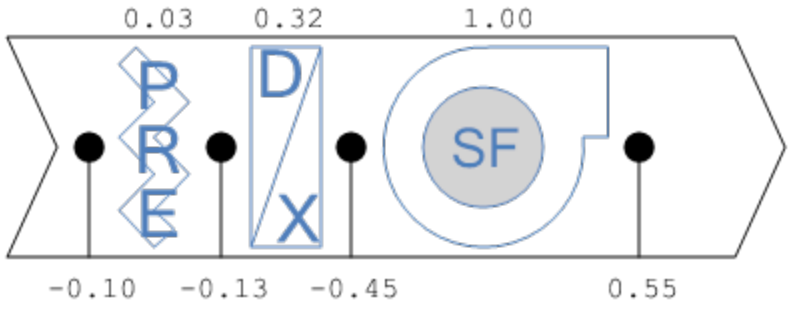
Log:

RTU-04	Outside air is operating at 179% of design. There is no outside air damper installed, to adjust the total airflow.
RTU-04	Unit is operating at 122% of design airflow. Setting the outside air will likely lower the unit total.

SYSTEM/UNIT: RTU-04/Static Profile

Tested By: Armon Scott
Date: 3/16/2023

Static Pressure Profile



Air Apparatus

RTU-04 Supply Outlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
S-01*	122 PROCESSING	CD	12	410	693	622	152	Capture Hood	1.000	1.000	622
S-02	120 REPAIR	CD	6	65	156	63	97	Capture Hood	1.000	1.000	63
S-03	CORR	CD	8	145	156	136	94	Capture Hood	1.000	1.000	136
S-04	127 JAN	CD	6	50	112	61	122	Capture Hood	1.000	1.000	61
S-05	128 RR	CD	6	50	77	60	120	Capture Hood	1.000	1.000	60
S-06	129 STOR	CD	6	50	136	55	110	Capture Hood	1.000	1.000	55
S-07	CORR	CD	8	150	184	158	105	Capture Hood	1.000	1.000	158
S-08	126 BIO	CD	6	100	109	109	109	Capture Hood	1.000	1.000	109
S-09	125 BREAKROOM	CD	10	250	319	290	116	Capture Hood	1.000	1.000	290
	Totals:	**-**	**-**	**1270**	**1942**	**1554**	**122**	**-**	**-**	**-**	**-**

Log: RTU-04/S-01 Outlet is operating at 152% of design. There is no damper installed.

RTU-04 Return Inlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
R-01*	122 PROCESSING	CD	22/22	310	85	80	26	Capture Hood	1.000	1.000	80
R-02	120 REPAIR	CD	22/22	65	45	45	69	Capture Hood	1.000	1.000	45
R-03	CORR	CD	22/22	385	319	305	79	Capture Hood	1.000	1.000	305
R-04	125 BREAKROOM	CD	22/22	250	85	170	68	Capture Hood	1.000	1.000	170
	Totals:	**-**	**-**	**1010**	**534**	**600**	**59**	**-**	**-**	**-**	**-**

Log: RTU-04/R-01 Return outlet is operating at 26% of design, ductwork is undersized at 6inch and not 10inch.

Air Apparatus

SYSTEM/UNIT: RTU-05

Tested By: Armon Scott
Date: 3/16/2023

Design Airflow (CFM)	
Design Total	1700
Design Grille Total	1695
Design Return	1350
Design Min O/A	350

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	Not Provided
Submittal Airflow	Not Provided
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	1
Submittal BHP	Not Provided
Filter MERV Rating (Sched/Sub)	2

Design Static Pressures (in wg)	
Design Ext SP	.75
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	Not Provided

Design Temperatures (°F)	
RTU-05/Cooling	
Des. Ent. DB (°F)	Not Listed
Des. Ent. WB (°F)	-
Design LAT DB (°F)	-
Design LAT WB (°F)	-
RTU-05/Heating	
Design EAT DB (°F)	Not Listed
Design LAT DB (°F)	-

Filter Data	
Condition	Partially Loaded
Filter Type	Pleated
MERV Rating	8
Filter Size Set 1 (in)	16/25/2
# Filters Set 1	2
Filter Size Set 2 (in)	-
# Filters Set 2	-

Motor Nameplate Data	
Motor Make	No Access - Embedded Motor
Motor Frame	-
Motor HP	-
Motor RPM	-
Motor Volts	208
Motor Phase	1
Motor Amps	5.1
Motor S.F.	-
Motor % PF	-
Motor % Eff.	-

Final Airflow (CFM)	
Actual Total CFM	1453
Actual Grille Total CFM	1453
Actual Return Air CFM	1453
Actual Min O/A CFM	0
Fan CFM Test Method	Supply Outlet Total
OA Method/Instrument	Not Applicable
OA Ak (sq ft)	Not Applicable
OA Damper Position	Closed
RA Damper Position	100% Open
RTU-05/Heating	
Actual Heating CFM	1453

Unit Data	
Make (tag)	Carrier
Model # (tag)	48GCEM04A2A5A0A0A0
Serial # (tag)	1922C06061
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	5.6
Clg Coil Vel (FPM)	259
Fan Service	Supply
Fan Type	Propeller
Fan Discharge	Downblast
Fan Arrangement	SWSI
RTU-05/Heating	
Coil Location	Unit / Discharge

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	Not Provided

Fan Data	
Actual Fan RPM/Speed	C40
Actual Motor RPM	Not Accessible

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	213
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	5.1
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.00
Approx. BHP	
Corr. Nameplate Amps	5.0
Starter Data	-
VFD Reference	-

Air Apparatus

SYSTEM/UNIT: RTU-05

Tested By: Armon Scott
Date: 3/16/2023

Motor Nameplate Data	
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in)	-
VP Range	-
Center Distance (in)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Actual Temperatures (°F)	
RTU-05/Cooling	
Outside Air DB	86.6
Outside Air WB	74.0
Entering Air DB	81.1
Entering Air WB	72.1
Leaving Air DB	63.0
Leaving Air WB	60.6
RTU-05/Heating	
Entering Air DB	-
Leaving Air DB	-

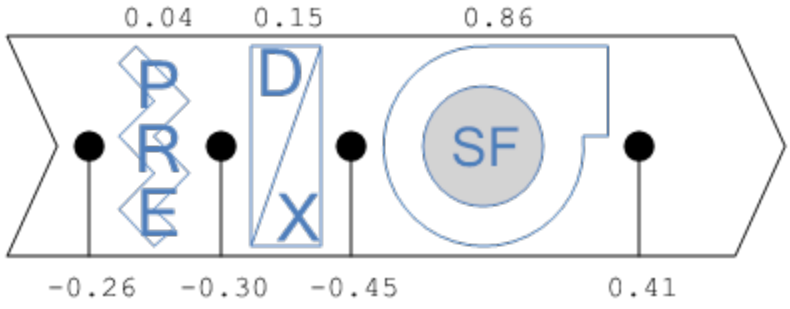
Log:

RTU-05	Outsize air controller is not installed, damper is closed.
RTU-05	Unit is operating at 86% of design. Opening the outside air damper may increase the unit total airflow.

SYSTEM/UNIT: RTU-05/Static Profile

Tested By: Armon Scott
Date: 3/16/2023

Static Pressure Profile



Air Apparatus

RTU-05 Supply Outlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
S-01	103 EXAM	CD	8	160	108	149	93	Capture Hood	1.000	1.000	149
S-02	104 EXAM	CD	8	175	108	140	80	Capture Hood	1.000	1.000	140
S-03	RESTROOM	CD	6	75	71	68	91	Capture Hood	1.000	1.000	68
S-04	RESTROOM	CD	6	75	65	71	95	Capture Hood	1.000	1.000	71
S-05	116 DIRECTOR	CD	8	170	119	160	94	Capture Hood	1.000	1.000	160
S-06	117 SUPERVISOR	CD	8	165	154	144	87	Capture Hood	1.000	1.000	144
S-07	118 QA/TRAINING	CD	8	220	130	179	81	Capture Hood	1.000	1.000	179
S-08	123 CONFER	CD	10	355	199	270	76	Capture Hood	1.000	1.000	270
S-09	124 STORAGE	CD	8	150	119	138	92	Capture Hood	1.000	1.000	138
S-10	124 STORAGE	CD	8	150	156	134	89	Capture Hood	1.000	1.000	134
	Totals:	**-**	**-**	**1695**	**1229**	**1453**	**86**	**-**	**-**	**-**	**-**

RTU-05 Return Inlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
R-01	103 EXAM	CD	22/22	160	112	93	58	Capture Hood	1.000	1.000	93
R-02	104 EXAM	CD	22/22	160	101	94	59	Capture Hood	1.000	1.000	94
R-03	116 DIRECTOR	CD	22/22	160	140	93	58	Capture Hood	1.000	1.000	93
R-04	117 SUPERVISOR	CD	22/22	155	104	92	59	Capture Hood	1.000	1.000	92
R-05	118 QA/TRAINING	CD	22/22	210	184	111	53	Capture Hood	1.000	1.000	111
R-06	123 CONFER	CD	22/22	330	109	190	58	Capture Hood	1.000	1.000	190
R-07	124 STORAGE	CD	22/22	290	163	200	69	Capture Hood	1.000	1.000	200
	Totals:	**-**	**-**	**1465**	**913**	**873**	**60**	**-**	**-**	**-**	**-**

Fan

SYSTEM/UNIT: EF-01

Tested By: Armon Scott
Date: 3/21/2023

Design Airflow (CFM)	
Design Airflow	300
Design Grille Airflow	300

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	Not Provided
Submittal Airflow	Not Provided
Sched./Sub. Volts	120
Sched./Sub. Phase	1
Sched./Sub. HP	1/6
Submittal BHP	Not Provided

Design Static Pressures (in wg)	
Design External SP	.40
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	P-Tech
Motor Frame (tag)	Not Listed
Motor HP (tag)	Not Listed
Motor RPM (tag)	1800
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	1.1
Motor S.F. (tag)	Not Listed
Mtr % PF (tag)	-
Mtr % Eff. (tag)	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Final Airflow (CFM)	
Actual Airflow	298
Actual Grille Airflow	298
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	1.000

Unit Data	
Make (tag)	Cook
Model # (tag)	90 ACEH 90C17DEC
Serial # (tag)	060SK22481-00/0000701
Unit Location	Roof
Unit Discharge	Downblast
Fan Service	Exhaust
Fan Type	Centrifugal (AF)
Fan Discharge	Downblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	Not Provided

Fan Data	
Actual Fan RPM/Speed	Medium
Actual Motor RPM	Not Accessible
Speed Cont. Position	Medium

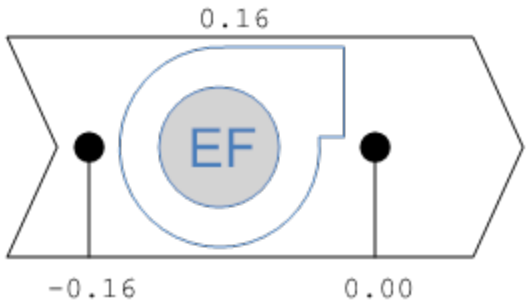
Electrical Data	
Measurement Method	Not Accessible
Motor Volts 1	Not Accessible
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	Not Accessible
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Not Applicable
Approx. BHP	
Corr. Nameplate Amps	

Fan

SYSTEM/UNIT: EF-01/Static Profile

Tested By: Armon Scott
Date: 3/21/2023

Static Pressure Profile



EF-01 Exhaust Inlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
E-01	RESTROOM	CD	8/8	150	198	146	97	Capture Hood	1.000	1.000	146
E-02	RESTROOM	CD	8/8	150	216	152	101	Capture Hood	1.000	1.000	152
	Totals:	-	-	**300**	**414**	**298**	**99**	-	-	-	-

Fan

SYSTEM/UNIT: EF-02

Tested By: Armon Scott
Date: 3/22/2023

Design Airflow (CFM)	
Design Airflow	150
Design Grille Airflow	200

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	Not Provided
Submittal Airflow	Not Provided
Sched./Sub. Volts	120
Sched./Sub. Phase	1
Sched./Sub. HP	1/6
Submittal BHP	Not Provided

Design Static Pressures (in wg)	
Design External SP	.30
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	P-Tech
Motor Frame (tag)	Not Listed
Motor HP (tag)	Not Listed
Motor RPM (tag)	1800
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	1.1
Motor S.F. (tag)	Not Listed
Mtr % PF (tag)	-
Mtr % Eff. (tag)	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Final Airflow (CFM)	
Actual Airflow	121
Actual Grille Airflow	121
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	1.000

Unit Data	
Make (tag)	Cook
Model # (tag)	70 ACEH 70C15DEC
Serial # (tag)	060SK22481-00/0001901
Unit Location	Roof
Unit Discharge	Downblast
Fan Service	Exhaust
Fan Type	Centrifugal (AF)
Fan Discharge	Downblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	Not Provided

Fan Data	
Actual Fan RPM/Speed	High
Actual Motor RPM	Not Accessible
Speed Cont. Position	High

Electrical Data	
Measurement Method	Not Accessible
Motor Volts 1	Not Accessible
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	Not Accessible
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Not Applicable
Approx. BHP	
Corr. Nameplate Amps	

Log:

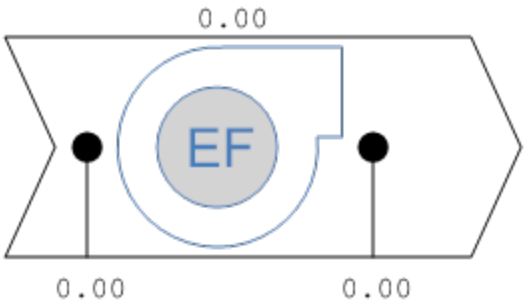
EF-02	Fan and grille design differ, fan may be undersized for the grille design.
EF-02	Fan is operating at 61% of design. The wiring runs through the backdraft and may be limiting the airflow as a result.

Fan

SYSTEM/UNIT: EF-02/Static Profile

Tested By: Armon Scott
Date: 3/22/2023

Static Pressure Profile



EF-02 Exhaust Inlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
E-01	RESTROOM	CD	8/8	100	59	59	59	Capture Hood	1.000	1.000	59
E-02	RESTROOM	CD	8/8	100	62	62	62	Capture Hood	1.000	1.000	62
	Totals:	-	-	**200**	**121**	**121**	**61**	-	-	-	-

Fan

SYSTEM/UNIT: EF-03

Tested By: Armon Scott
Date: 3/22/2023

Design Airflow (CFM)	
Design Airflow	150
Design Grille Airflow	150

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	Not Provided
Submittal Airflow	Not Provided
Sched./Sub. Volts	120
Sched./Sub. Phase	1
Sched./Sub. HP	1/6
Submittal BHP	Not Provided

Design Static Pressures (in wg)	
Design External SP	.30
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	P-Tech
Motor Frame (tag)	Not Listed
Motor HP (tag)	Not Listed
Motor RPM (tag)	1800
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	1.1
Motor S.F. (tag)	Not Listed
Mtr % PF (tag)	-
Mtr % Eff. (tag)	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Final Airflow (CFM)	
Actual Airflow	149
Actual Grille Airflow	149
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	1.000

Unit Data	
Make (tag)	Cook
Model # (tag)	70 ACEH 70C15DEC
Serial # (tag)	060SK22481-00/0001902
Unit Location	Roof
Unit Discharge	Downblast
Fan Service	Exhaust
Fan Type	Centrifugal (AF)
Fan Discharge	Downblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	Not Provided

Fan Data	
Actual Fan RPM/Speed	High
Actual Motor RPM	Not Accessible
Speed Cont. Position	High

Electrical Data	
Measurement Method	Not Accessible
Motor Volts 1	Not Accessible
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	Not Accessible
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Not Applicable
Approx. BHP	
Corr. Nameplate Amps	

Fan

SYSTEM/UNIT: EF-04

Tested By: Armon Scott
Date: 3/21/2023

Design Airflow (CFM)	
Design Airflow	350
Design Grille Airflow	350

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	Not Provided
Submittal Airflow	Not Provided
Sched./Sub. Volts	120
Sched./Sub. Phase	1
Sched./Sub. HP	1/6
Submittal BHP	Not Provided

Design Static Pressures (in wg)	
Design External SP	.30
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	P-Tech
Motor Frame (tag)	Not Listed
Motor HP (tag)	Not Listed
Motor RPM (tag)	1800
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	1.1
Motor S.F. (tag)	Not Listed
Mtr % PF (tag)	-
Mtr % Eff. (tag)	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Final Airflow (CFM)	
Actual Airflow	251
Actual Grille Airflow	251
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	1.000

Unit Data	
Make (tag)	Cook
Model # (tag)	90 ACEH 90C17DEC
Serial # (tag)	060SK22481-00/0000702
Unit Location	Roof
Unit Discharge	Downblast
Fan Service	Exhaust
Fan Type	Centrifugal (AF)
Fan Discharge	Downblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	Not Provided

Fan Data	
Actual Fan RPM/Speed	High
Actual Motor RPM	Not Accessible
Speed Cont. Position	High

Electrical Data	
Measurement Method	Not Accessible
Motor Volts 1	Not Accessible
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	Not Accessible
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Not Applicable
Approx. BHP	
Corr. Nameplate Amps	

Log:

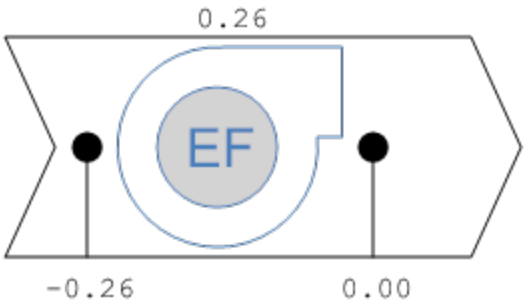
EF-04	Fan is operating at 72% of design. The wiring runs through the backdraft and may be limiting the airflow as a result.

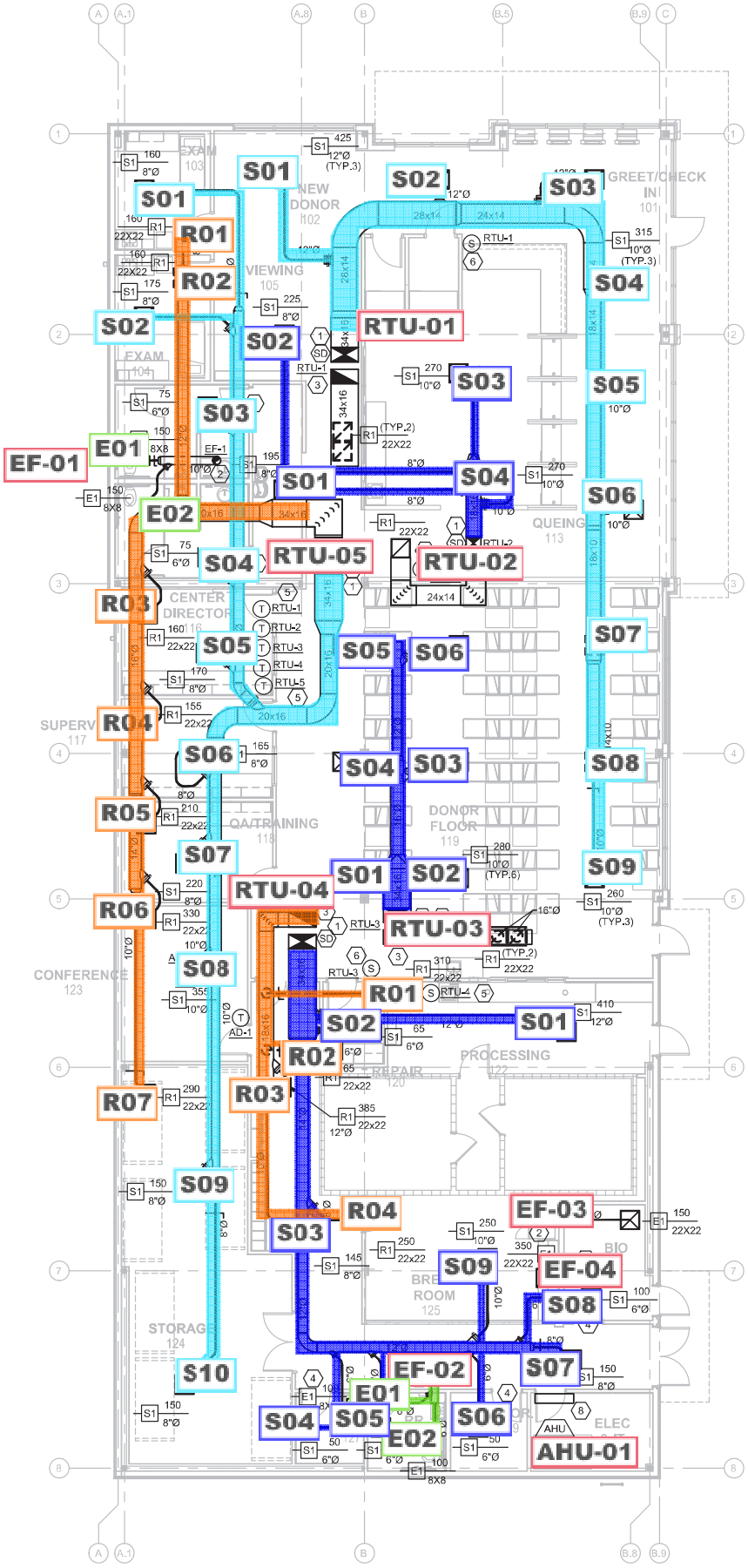
Fan

SYSTEM/UNIT: EF-04/Static Profile

Tested By: Armon Scott
Date: 3/21/2023

Static Pressure Profile





1 MECHANICAL PLAN
AS NOTED
SCALE: 1/8" = 1'-0" @ FULL SIZE

NORTH