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Report: TAB REPORT
Function: Test, Adjust, & Balance
Date: 09/19/2024
Completed By: National TAB

PROJECT
09-16-24 DOLLAR TREE- SPRINGFIELD, IL

1713 W JEFFERSON ST

SPRINGFIELD, IL 62702

Client

Cole & Connie Oliphant

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Project: 09-16-24 DOLLAR TREE- SPRINGFIELD, IL

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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.

AIR BALANCE SCHEDULE

UNIT	AREA SERVED	HVAC SUPPLY		HVAC RETURN		HVAC OUTDOOR		OA %		HOOD MAKE-UP		HOOD EXHAUST		GENERAL EXH.	
		DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL
RTU-1	STORAGE	1750	1796	1600	1649	150	147	8.6%	8.2%						
RTU-2	WEST SALES	2800	2931	2450	2561	350	370	12.5%	12.6%						
RTU-3	EAST SALES	2800	2777	2450	2417	350	360	12.5%	13.0%						
RTU-4	SOUTH SALES	3500	3624	3100	3207	400	417	11.4%	11.5%						
EF-1	RESTROOM													75	40
EF-2	RESTROOM													75	39
TOTALS		10850	11128	9600	9834	1250	1294			0	0	0	0	150	79

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	1250	1294
TOTAL EXHAUST	150	79
NET AIRFLOW	1100	1215

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H2O)
FRONT	0.0165
SIDE	
REAR	0.0102
AVERAGE	0.0134

FINAL CHECKS

- ACTUAL NET AIRFLOW COINCIDES WITH DESIGN: ✓

- MEASURED PRESSURES COINCIDES WITH ACTUAL NET AIRFLOW: ✓

- PRESSURE FALLS WITHIN IMC TOLERANCE OF +/-0.02" W.C. ✓

NOTES:

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Project: 09-16-24 DOLLAR TREE- SPRINGFIELD, IL

System/Unit: AHU/RTU



Asset: RTU 1

AREA:

Unit Data		
	Design	Actual
MFG	CARRIER	CARRIER
Serial Num	-	3823C10455
Model Num	48GCE	48GCEM05A2M5A6W1F0
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	28X14
Num Final Filter 1	-	2
Final Filter Size 1	-	16X25X2

Motor Data		
	Design	Actual
Motor MFG	-	NA
Frame	-	NA
Horsepower	1.4	NA
Motor Rpm	-	NA
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	7.1

Drive Data	
	Actual
Motor Sheave Size	DD
Motor Bore Size	DD
Motor Sheave SetPt	7.6VDC
Fan Sheave Size	DD
Fan Sheave Bore	DD
Belt CL Distance	DD
Num of Belts	DD
Belt Size	DD
Belt Alignment	DD

Test Data		
	Design	Actual
SF CFM	1750	1796
SF RPM	-	1581
RA CFM	1600	1649
OA CFM	150	147
RL Voltage	-	211.5/211.3/211.5
RL Amperage	-	3.0/3.1/3.0
SF Rotation	-	CW
SF System SetPt	-	7.6VDC
RA Damper Position	-	7.40V
Min OA Damper Position	-	2.60V
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	ES5

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.51"
Fan Suction SP	-	-0.71"
Fan Discharge SP	-	0.11"
Total ESP	1.0	0.62"
Fan Total SP	-	0.82"

General	
	Actual
Fan Rotation Correct	YES
Unit Filters Clean	YES
Condensate Drain Installed	YES

Unit Data - PHOTO LOG



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Notes:

[1] Diffuser 1-8 high on flow, face damper is fully closed, branch damper is broken loose and free spinning. unable to decrease flow.

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Project:09-16-24 DOLLAR TREE- SPRINGFIELD, IL

AHU/RTU



Diffuser Supply (GRD)

RTU 1/

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
AHU1-SGRD1	STOCKROOM	D	14X6	300	0.58	270	288	288	96.0
AHU1-SGRD2	STOCKROOM	D	14X6	300	0.58	284	310	310	103.3
AHU1-SGRD3	STOCKROOM	D	14X6	300	0.58	181	304	304	101.3
AHU1-SGRD4	STOCKROOM	D	14X6	300	0.58	297	300	300	100.0
AHU1-SGRD5	STOCKROOM	D	14X6	300	0.58	271	316	316	105.3
AHU1-SGRD6	STOCKROOM	C	8	50	1.0	196	53	53	106.0
AHU1-SGRD7	STOCKROOM	A	8	50	1.0	113	51	51	102.0
AHU1-SGRD8	STOCKROOM	C	8	50	1.0	93	68[1]	68	136.0
RTU 1-SGRD9	OFFICE	C	8	100	1.0	110	106	106	106.0
Total				1750		1815	1728	1796	102.63%

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Project: 09-16-24 DOLLAR TREE- SPRINGFIELD, IL

System/Unit: AHU/RTU



Asset: RTU 2

AREA:

Unit Data		
	Design	Actual
MFG	CARRIER	CARRIER
Serial Num	-	3323P67904
Model Num	48FCE	48FCEM08A2M5A6W1F0
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	35X19.5
Num Final Filter 1	-	4
Final Filter Size 1	-	16X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NA
Frame	-	NA
Horsepower	2.4	NA
Motor Rpm	-	NA
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	6.4

Drive Data	
	Actual
Motor Sheave Size	DD
Motor Bore Size	DD
Motor Sheave SetPt	6.4VDC
Fan Sheave Size	DD
Fan Sheave Bore	DD
Belt CL Distance	DD
Num of Belts	DD
Belt Size	DD
Belt Alignment	DD

Test Data		
	Design	Actual
SF CFM	2800	2931
SF RPM	-	1426
RA CFM	2450	2561
OA CFM	350	370
RL Voltage	-	210.9/211.9/211.3
RL Amperage	-	2.2/3.1/2.6
SF Rotation	-	CW
SF System SetPt	-	6.4VDC
RA Damper Position	-	7.10V
Min OA Damper Position	-	2.90V
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	ES5

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.43"
Fan Suction SP	-	-0.64"
Fan Discharge SP	-	0.26"
Total ESP	1.0	0.69"
Fan Total SP	-	0.9"

General	
	Actual
Fan Rotation Correct	YES
Unit Filters Clean	YES
Condensate Drain Installed	YES

Unit Data - PHOTO LOG



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Project:09-16-24 DOLLAR TREE- SPRINGFIELD, IL

AHU/RTU



Diffuser Supply (GRD)

RTU 2/

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
AHU2-SGRD1	WEST SALES	B	12	350	1.0	487	374	370	105.7
AHU2-SGRD2	WEST SALES	B	12	350	1.0	602	454	374	106.9
AHU2-SGRD3	WEST SALES	B	12	350	1.0	598	454	368	105.1
AHU2-SGRD4	WEST SALES	B	12	350	1.0	402	303	359	102.6
AHU2-SGRD5	WEST SALES	B	12	350	1.0	437	326	357	102.0
AHU2-SGRD6	WEST SALES	B	12	350	1.0	546	412	370	105.7
AHU2-SGRD7	WEST SALES	B	12	350	1.0	570	427	361	103.1
AHU2-SGRD8	WEST SALES	B	12	350	1.0	480	345	372	106.3
Total				2800		4122	3095	2931	104.68%

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Project: 09-16-24 DOLLAR TREE- SPRINGFIELD, IL

System/Unit: AHU/RTU



Asset: RTU 3

AREA:

Unit Data		
	Design	Actual
MFG	CARRIER	CARRIER
Serial Num	-	3223P67835
Model Num	48FCE	48FCEM08A2M5AYW1F0
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	35X19.5
Num Final Filter 1	-	4
Final Filter Size 1	-	16X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NA
Frame	-	NA
Horsepower	2.4	NA
Motor Rpm	-	NA
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	6.4

Drive Data	
	Actual
Motor Sheave Size	DD
Motor Bore Size	DD
Motor Sheave SetPt	6.7VDC
Fan Sheave Size	DD
Fan Sheave Bore	DD
Belt CL Distance	DD
Num of Belts	DD
Belt Size	DD
Belt Alignment	DD

Test Data		
	Design	Actual
SF CFM	2800	2777
SF RPM	-	1325
RA CFM	2450	2417
OA CFM	350	360
RL Voltage	-	210.6/210.6/210.8
RL Amperage	-	2.6/2.7/2.3
SF Rotation	-	CW
SF System SetPt	-	6.7VDC
RA Damper Position	-	7.10V
Min OA Damper Position	-	2.90V
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	ES5

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.47"
Fan Suction SP	-	-0.74"
Fan Discharge SP	-	0.30"
Total ESP	-	0.77"
Fan Total SP	-	1.04"

General	
	Actual
Fan Rotation Correct	YES
Unit Filters Clean	YES
Condensate Drain Installed	YES

Unit Data - PHOTO LOG



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Project:09-16-24 DOLLAR TREE- SPRINGFIELD, IL

AHU/RTU



Diffuser Supply (GRD)

RTU 3/

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
AHU3-SGRD1	EAST SALES	B	12	350	1.0	396	311	341	97.4
AHU3-SGRD2	EAST SALES	B	12	350	1.0	475	348	339	96.9
AHU3-SGRD3	EAST SALES	B	12	350	1.0	538	381	355	101.4
AHU3-SGRD4	EAST SALES	B	12	350	1.0	473	346	368	105.1
AHU3-SGRD5	EAST SALES	B	12	350	1.0	505	341	356	101.7
AHU3-SGRD6	EAST SALES	B	12	350	1.0	566	401	345	98.6
AHU3-SGRD7	EAST SALES	B	12	350	1.0	589	404	351	100.3
AHU3-SGRD8	EAST SALES	B	12	350	1.0	404	283	322	92.0
Total				2800		3946	2815	2777	99.18%

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Project: 09-16-24 DOLLAR TREE- SPRINGFIELD, IL

System/Unit: AHU/RTU



Asset: RTU 4

AREA:

Unit Data		
	Design	Actual
MFG	CARRIER	CARRIER
Serial Num	-	3523P69287
Model Num	48FCE	48FCEM12A2M5A6W1F0
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	35X19.5
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NA
Frame	-	NA
Horsepower	3.0	NA
Motor Rpm	-	NA
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	6.4

Drive Data	
	Actual
Motor Sheave Size	DD
Motor Bore Size	DD
Motor Sheave SetPt	7.9VDC
Fan Sheave Size	DD
Fan Sheave Bore	DD
Belt CL Distance	DD
Num of Belts	DD
Belt Size	DD
Belt Alignment	DD

Test Data		
	Design	Actual
SF CFM	3500	3624
SF RPM	-	1669
RA CFM	3100	3207
OA CFM	400	417
RL Voltage	-	207.9/207.8/208.2
RL Amperage	-	4.3/4.4/4.1
SF Rotation	-	CW
SF System SetPt	-	7.9VDC
RA Damper Position	-	NA
Min OA Damper Position	-	MANUALLY SET 1/2" OPEN
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	ES5

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.59"
Fan Suction SP	-	-0.90"
Fan Discharge SP	-	0.47"
Total ESP	1.0	1.06"
Fan Total SP	-	1.37"

General	
	Actual
Fan Rotation Correct	YES
Unit Filters Clean	YES
Condensate Drain Installed	YES

Unit Data - PHOTO LOG



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Project:09-16-24 DOLLAR TREE- SPRINGFIELD, IL

AHU/RTU



Diffuser Supply (GRD)

RTU 4/

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
AHU4-SGRD1	SOUTH SALES	B	12	440	1.0	453	405	457	103.9
AHU4-SGRD2	SOUTH SALES	B	12	435	1.0	490	453	442	101.6
AHU4-SGRD3	SOUTH SALES	B	12	435	1.0	453	413	460	105.7
AHU4-SGRD4	SOUTH SALES	B	12	440	1.0	538	489	453	103.0
AHU4-SGRD5	SOUTH SALES	B	12	440	1.0	553	504	448	101.8
AHU4-SGRD6	SOUTH SALES	B	12	435	1.0	497	456	462	106.2
AHU4-SGRD7	SOUTH SALES	B	12	435	1.0	618	586	448	103.0
AHU4-SGRD8	SOUTH SALES	B	12	440	1.0	470	405	454	103.2
Total				3500		4072	3711	3624	103.54%

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Project: 09-16-24 DOLLAR TREE- SPRINGFIELD, IL

System/Unit: FAN - Exhaust



Asset: EF1

AREA:

Unit Data		
	Design	Actual
MFG	GREENHECK	BROAN
Model Num	SP-B110	AE80B-B
Serial Num	-	42D03T
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Test Data		
	Design	Actual
CFM	75	40
Fan RPM	-	900
Fan Rotation	-	CCW
Motor RPM	-	900
System SetPt	-	HIGH SPEED
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	0.25	NA
Fan Inlet SP	-	NA
Fan Discharge SP	-	ATM

Motor Data		
	Design	Actual
Motor MFG	-	OCEAN MOTOR
Frame	-	NL
Horsepower	80	NL
Motor Rpm	-	900
Phase	1	1
Voltage (rated)	120	120
Amperage (rated)	-	0.3
Service Factor	-	NL

Unit Data - PHOTO LOG



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Project: 09-16-24 DOLLAR TREE- SPRINGFIELD, IL

System/Unit: FAN - Exhaust



Asset: EF2

AREA:

Unit Data		
	Design	Actual
MFG	GREENHECK	BROAN
Model Num	SP-B110	AE80B-B
Serial Num	-	42D03T
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	Actual
Motor MFG	-	OCEAN MOTOR
Frame	-	NL
Horsepower	80	NL
Motor Rpm	-	900
Phase	1	1
Voltage (rated)	120	120
Amperage (rated)	-	0.3
Service Factor	-	NL

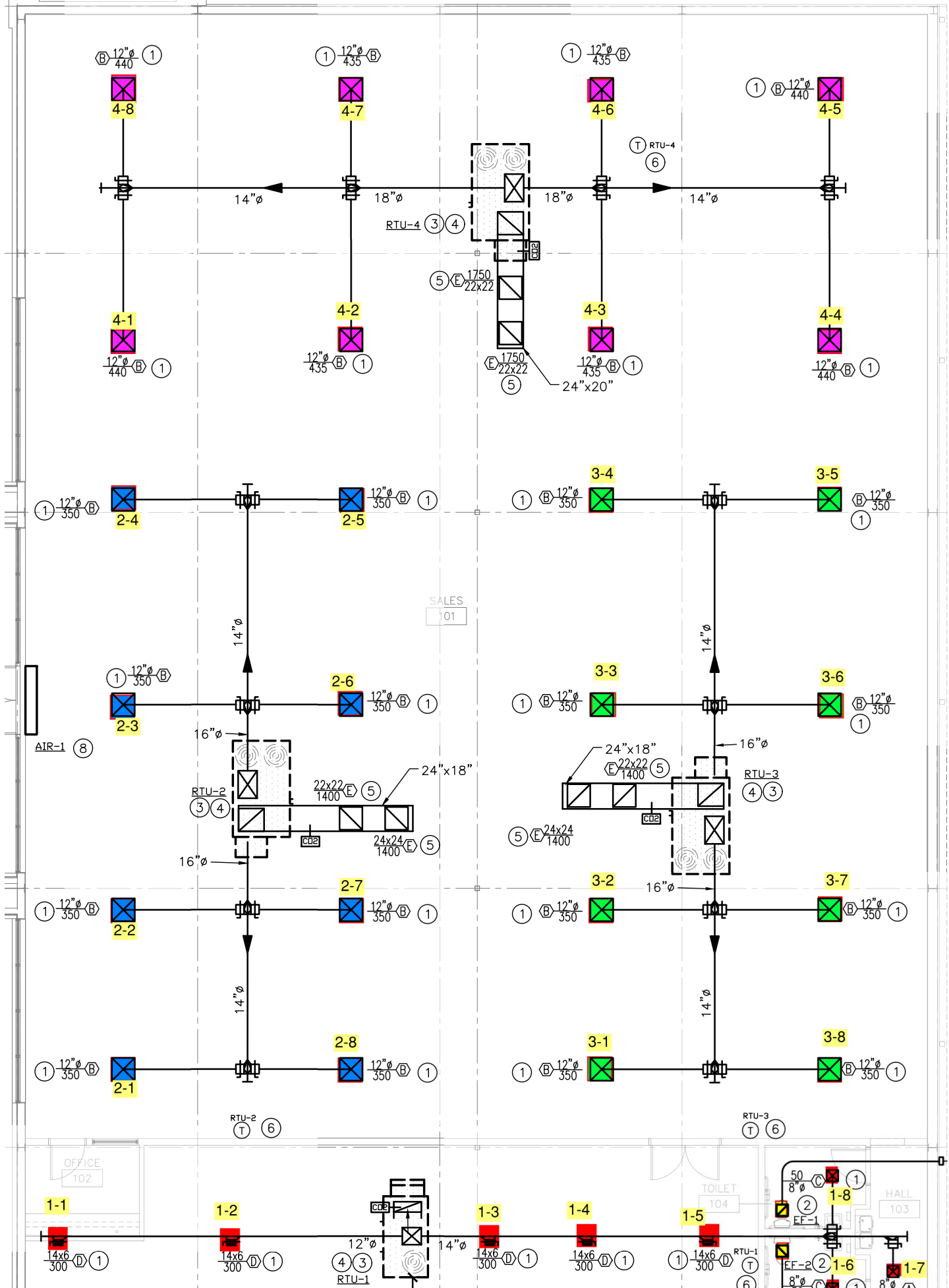
Test Data		
	Design	Actual
CFM	75	39
Fan RPM	-	900
Fan Rotation	-	CCW
Motor RPM	-	900
System SetPt	-	HIGH SPEED
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	0.25	NA
Fan Inlet SP	-	NA
Fan Discharge SP	-	ATM

Unit Data - PHOTO LOG



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Date: 9/30/2024

COORDINATE SA & RA DROPS FROM RTU WITH STORAGE AREA WALLS. LOCATE RTU DROPS INSIDE STORAGE AREA.

