

Report By:

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Report: TAB REPORT
Function: Test, Adjust, & Balance
Date: 07/31/2024

PROJECT

07-08-24 WAWA #05803 ROBERTSDALE, AL

21022 HWY 59 BALDWIN

ROBERTSDALE, AL 36567

Client

Wawa
260 West Baltimore Pike
Wawa, PA 19063

National TAB

Project: 07-08-24 WAWA #05803 ROBERTSDALE, AL

Table Of Contents

Section	Page #
Summary	3
Issue Data	4
Balance Schedule	7
AHU/RTU	8
FAN - Exhaust	14
GRD Layout	17

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.

Ceiling Exhaust Fans

The ceiling exhaust fans were measured using a flow hood. If speed adjustment was provided, the fan speed was adjusted to within design tolerance. 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.

Issue List

- Diffuser 1-3 Low Flow
- EF-1 Over Amps



07-08-24 WAWA #05803 ROBERTSDALE, AL

Project Issue Information

Issue Name : Diffuser 1-3 Low Flow
Description : Diffuser 1-3 has a current airflow of 211 CFM (70% of design). Damper appears to be fully opened. Recommend inspecting damper and duct for possible pinching or obstruction.
Created By : National TAB **Assigned To :** National TAB - Brianna Biggs
Status : Open
Priority : Medium **Asset Tag :**
Originated Date : 07/10/2024 - Mark Johnson - National TAB

Project Issue Response Details

- **07/11/2024 National TAB - Mark Johnson**
 - Airflow was increased to 77% of design, but could not be increased further via damper or duct adjustment. The remaining diffusers are within design.



07-08-24 WAWA #05803 ROBERTSDALE, AL

Project Issue Information

Issue Name : EF-1 Over Amps
Description : The motor for EF-1 is overramping at all speeds. At design flow, motor is at 4.3 amps. Recommend inspecting motor for coil damage or other issues. Fan was switched off after balancing and the required speed was marked on the speed controller.
Created By : National TAB **Assigned To :** National TAB - Brianna Biggs
Status : Open
Priority : Urgent **Asset Tag :**
Originated Date : 07/11/2024 - Mark Johnson - National TAB

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	RETAIL	3400	3338	2790	2710	610	628	17.9%	18.8%						
RTU-2	FOOD SERVICE	4000	4147	3350	3478	650	669	16.3%	16.1%						
RTU-3	RETAIL	3000	3131	2610	2730	390	401	13.0%	12.8%						
EF-1	FOOD SERVICE													1150	1089
EF-2	WATER ROOM													60	102
TOTALS		10400	10616	8750	8918	1650	1698			0	0	0	0	1210	1191

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	1650	1698
TOTAL EXHAUST	1210	1191
NET AIRFLOW	440	507

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H2O)
FRONT	0.008
SIDE	0.009
REAR	0.007
AVERAGE	0.008

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: 07-08-24 WAWA #05803 ROBERTSDALE, AL

System/Unit: AHU/RTU

Asset: RTU1

AREA:RETAIL

Unit Data		
	Design	Actual
MFG	LENNOX ENLIGHT	LENNOX
Serial Num	-	5623L01920
Model Num	LCT102H4E	LCT102H4EG1Y
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	2
OA Filter Size 1	-	23x14.25
Num Final Filter 1	-	4
Final Filter Size 1	-	20x25x2

Test Data		
	Design	Actual
SF CFM	3400	3338
RA CFM	2790	2710
OA CFM	610	628
RL Voltage	-	212/213/213
RL Amperage	-	3.0/2.4/2.5
SF System SetPt	-	62%
RA Damper Position	-	69%
RA Damper Type	-	ECONOMIZER
OA Damper Position	-	31%
OA Damper Type	-	ECONOMIZER

Motor Data		
	Design	Actual
Motor MFG	-	EBMPAPST
Frame	-	N/A
Horsepower	3.75	3.8
Motor Rpm	-	2200
Phase	3	3
Rated Voltage	208	200-240
Rated Amperage	-	8.7
Service Factor	-	N/A

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.36"
Fan Suction SP	-	-0.69"
Fan Discharge SP	-	0.45"
Total ESP	0.5"	0.81"
Fan Total SP	-	1.14"

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

Completed By: Mark Johnson on 07/11/2024



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Project:07-08-24 WAWA #05803 ROBERTSDALE, AL

AHU/RTU

Diffuser Supply (GRD)

RTU1/RETAIL

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	RETAIL	LD1	10"	300	1	429	345	281	93.7
SGRD2	RETAIL	LD1	10"	300	1	428	329	300	100.0
SGRD3	RETAIL	LD1	10"	300	1	267	227	232	77.3
SGRD4	ASSOCIATES	CD1	8"	150	1	178	153	147	98.0
SGRD5	OFFICE	CD1	8"	150	1	201	174	156	104.0
SGRD6	RETAIL	LD1	10"	325	1	512	421	350	107.7
SGRD7	RETAIL	LD1	10"	325	1	463	399	323	99.4
SGRD8	RETAIL	LD1	10"	300	1	289	260	271	90.3
SGRD9	RETAIL	LD1	10"	290	1	344	278	313	107.9
SGRD10	DELIVERY VESTIBULE	CD1	8"	200	1	261	219	192	96.0
SGRD11	RETAIL	LD1	10"	280	1	430	343	295	105.4
SGRD12	RETAIL	LD1	10"	280	1	122	108	285	101.8
SGRD13	REAR VESTIBULE	CD3	6"	100	1	94	87	93	93.0
SGRD14	MENS RR	CD3	6"	50	1	109	99	54	108.0
SGRD15	WOMENS RR	CD3	6"	50	1	120	92	46	92.0
Total				3400		4247	3534	3338	98.18%



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Project: 07-08-24 WAWA #05803 ROBERTSDALE, AL

System/Unit: AHU/RTU

Asset: RTU2

AREA:FOOD SERVICE

Unit Data		
	Design	Actual
MFG	LENNOX ENLIGHT	LENNOX
Serial Num	-	5624B06330
Model Num	LCT120H4E	LCT120H4EN1Y
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	2
OA Filter Size 1	-	23x14.25
Num Final Filter 1	-	4
Final Filter Size 1	-	20x25x2

Motor Data		
	Design	Actual
Motor MFG	-	EBMPAPST
Frame	-	N/A
Horsepower	3.75	3.8
Motor Rpm	-	2200
Phase	3	3
Rated Voltage	208	200-240
Rated Amperage	-	8.7
Service Factor	-	N/A

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

Test Data		
	Design	Actual
SF CFM	4000	4147
RA CFM	3350	3478
OA CFM	650	669
RL Voltage	-	211/212/212
RL Amperage	-	5.5/5.5/5.6
SF System SetPt	-	82%
RA Damper Position	-	75%
RA Damper Type	-	ECONOMIZER
OA Damper Position	-	25%
OA Damper Type	-	ECONOMIZER

Performance Data		
	Design	Actual
MA Plenum SP	-	-1.27"
Fan Suction SP	-	-1.66"
Fan Discharge SP	-	0.55"
Total ESP	0.5"	1.82"
Fan Total SP	-	2.21"

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Project:07-08-24 WAWA #05803 ROBERTSDALE, AL

AHU/RTU

Diffuser Supply (GRD)

RTU2/FOOD SERVICE

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	FOOD SERVICE	LD1	10"	400	1	319	389	418	104.5
SGRD2	FOOD SERVICE	LD1	10"	400	1	335	364	389	97.3
SGRD3	FOOD SERVICE	LD1	10"	400	1	405	391	408	102.0
SGRD4	FOOD SERVICE	LD1	12"	500	1	635	522	539	107.8
SGRD5	FOOD SERVICE	LD1	12"	500	1	368	508	533	106.6
SGRD6	FOOD SERVICE	LD1	12"	500	1	363	420	495	99.0
SGRD7	WASHROOM	LD1	10"	400	1	425	445	411	102.8
SGRD8	BACKROOM	CD1	10"	300	1	493	310	328	109.3
SGRD9	STAGING	CD1	6"	50	1	95	52	52	104.0
SGRD10	ELECTRICAL ROOM	CD1	12"	550	1	524	565	574	104.4
Total				4000		3962	3966	4147	103.68%



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Project: 07-08-24 WAWA #05803 ROBERTSDALE, AL

System/Unit: AHU/RTU

Asset: RTU3

AREA:RETAIL

Unit Data		
	Design	Actual
MFG	LENNOX ENLIGHT	LENNOX
Serial Num	-	5623L02244
Model Num	LCT092H4E	LCT092H4EG1Y
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	2
OA Filter Size 1	-	23x14.25
Num Final Filter 1	-	4
Final Filter Size 1	-	20x25x2

Motor Data		
	Design	Actual
Motor MFG	-	EBMPAPST
Frame	-	N/A
Horsepower	3.75	3.8
Motor Rpm	-	2200
Phase	3	3
Rated Voltage	208	200-240
Rated Amperage	-	8.7
Service Factor	-	N/A

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

Test Data		
	Design	Actual
SF CFM	3000	3131
RA CFM	2610	2730
OA CFM	390	401
RL Voltage	-	211/212/212
RL Amperage	-	2.9/3.0/3.0
SF System SetPt	-	65%
RA Damper Position	-	77%
RA Damper Type	-	ECONOMIZER
OA Damper Position	-	23%
OA Damper Type	-	ECONOMIZER

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.75"
Fan Suction SP	-	-1.02"
Fan Discharge SP	-	0.46"
Total ESP	0.5"	1.21"
Fan Total SP	-	1.48"

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Project:07-08-24 WAWA #05803 ROBERTSDALE, AL

AHU/RTU

Diffuser Supply (GRD)

RTU3/RETAIL

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	FRONT VESTIBULE	CD2	12"	590	1	761	597	607	102.9
SGRD2	RETAIL	LD1	10"	310	1	109	402	331	106.8
SGRD3	RETAIL	LD1	10"	300	1	446	253	320	106.7
SGRD4	RETAIL	LD1	10"	300	1	640	285	309	103.0
SGRD5	COFFEE/SPECIALTY BEV	LD1	10"	300	1	110	434	327	109.0
SGRD6	COFFEE/SPECIALTY BEV	LD1	10"	300	1	82	381	319	106.3
SGRD7	COFFEE/SPECIALTY BEV	LD1	10"	300	1	484	309	306	102.0
SGRD8	RETAIL	LD1	10"	300	1	425	265	307	102.3
SGRD9	RETAIL	LD1	10"	300	1	121	282	305	101.7
Total				3000		3178	3208	3131	104.37%



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Project: 07-08-24 WAWA #05803 ROBERTSDALE, AL

System/Unit: FAN - Exhaust

Asset: EF1

AREA:

Unit Data		
	Design	Actual
MFG	GREENHECK	GREENHECK
Model Num	G-140	G-140-B-4-1-22-X
Serial Num	-	24139800
Type	DOWNBLAST	DOWNBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	Actual
Motor MFG	-	N/A
Frame	-	48Y
Horsepower	1/4	1/4
Motor Rpm	-	1140
Phase	1	1
Voltage (rated)	120	115
Amperage (rated)	-	3.2
Service Factor	-	1.00

Test Data		
	Design	Actual
CFM	1150	1089
Fan Rotation	-	CW
System SetPt	-	SPEED CONTROLLER
RL Voltage	-	96
RL Amperage	-	4.3
Total ESP	0.25"	0.42"
Fan Inlet SP	-	-0.42"
Fan Discharge SP	-	ATM

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Project:07-08-24 WAWA #05803 ROBERTSDALE, AL

FAN - Exhaust

Diffuser Ret/Exh (GRD)

EF1/

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
EGRD1	FOOD SERVICE	G1	12"	500		748	493	508	101.6
EGRD2	WASHROOM	G1	10"	300		455	432	292	97.3
EGRD3	STAGING	G1	6"	100		31	109	107	107.0
EGRD4	WOMENS RR	G3	6"	100		62	64	50	50.0
EGRD5	MENS RR	G3	6"	50		85	82	65	130.0
EGRD6	MENS RR	G3	6"	100		89	93	72	72.0
Total				1150		1470	1273	1094	95.13%



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Project: 07-08-24 WAWA #05803 ROBERTSDALE, AL

System/Unit: FAN - Exhaust

Asset: EF2

AREA:

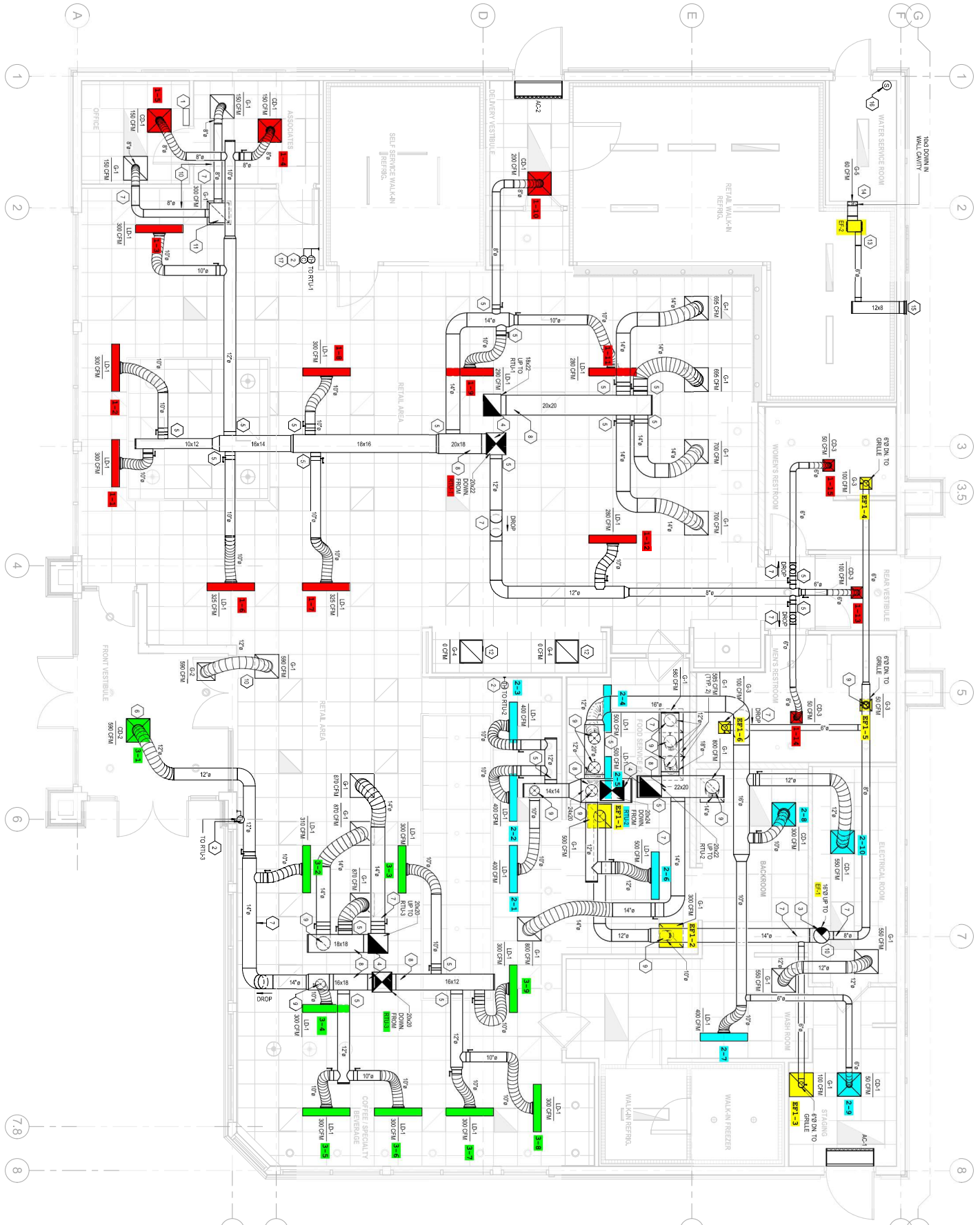
Unit Data		
	Design	Actual
MFG	GREENHECK	GREENHECK
Model Num	CSP-B110	CSP-A110
Serial Num	-	24134467
Type	INLINE	INLINE
Configuration	VERTICAL	VERTICAL

Test Data		
	Design	Actual
CFM	60	102
Fan Rotation	-	CCW
System SetPt	-	MIN
RL Voltage	-	123
RL Amperage	-	0.1

Motor Data		
	Design	Actual
Motor MFG	-	GREENHECK
Frame	-	N/A
Horsepower	21W	N/A
Motor Rpm	-	950
Phase	1	1
Voltage (rated)	120	115
Amperage (rated)	-	0.19
Service Factor	-	N/A

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1 HVAC FLOOR PLAN
 1/4" = 1'-0"



- 1 REAR WALL
- 2 REAR WALL
- 3 REAR WALL
- 4 REAR WALL
- 5 REAR WALL
- 6 REAR WALL
- 7 REAR WALL
- 8 REAR WALL
- 9 REAR WALL
- 10 REAR WALL
- 11 REAR WALL
- 12 REAR WALL
- 13 REAR WALL
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