

Report By:

National TAB
1329 E. KEMPER ROAD
SUITE 4210
CINCINNATI, OH 45246



Report: TAB REPORT
Function: Test, Adjust, & Balance
Date: 11/07/2024
Completed By: National TAB

PROJECT
Daybreak Market Wesley Chapel, FL

3182 Hueland Pond Blvd

Wesley Chapel, FL 33543

Client

SMT Mechanical

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Project: Daybreak Market Wesley Chapel, FL

Table Of Contents

Section	Page #
Summary	3
Balance Schedule	4
AHU/RTU	5
FAN - Exhaust	8
GRD Layout	10

Project Summary

Introduction

Scope for the Daybreak Market in Wesley Chapel is to balance (1) RTU, (1) EF, and all associated air devices. Reason for the visit is to address concerns of negative building pressure and to ensure the equipment is properly balanced.

RTU-1

Initially the RTU was found running 50HZ and the airflow was measured as 4735 CFM (73% of design). The mechanical contractor indicated that there had been an issue in the past where the RTU had tripped off. The supply fan VFD had been set to 60 Hz which caused it to overamp and trip off. To keep the unit running they had set to 50Hz.

Fan speed was increased to 57Hz and at this speed the airflow was 89% of design. This airflow was validated with both flow hood and traverse readings. At 58Hz, the airflow was at and sometimes exceeding the full load rating of the motor. Left at 57 Hz to prevent the unit from tripping off again.

The diffusers are unbalanced and the airflow to the employee areas is low. There is a branch damper that was found that is not on the plans and it was confirmed to be fully open. Also verified that all individual volume dampers are fully open. Unable to push air to the employee area without dropping the total flow below design and being a possible detriment to the overall unit performance.

The outside air damper was initially found set to a 3V setpoint which was nearly closed so it was bringing almost 0 CFM of outside air. The damper was opened to a setting of 4.1 V to achieve design airflow of 817 CFM.

EF-1

The exhaust fan was initially found operating at 660 CFM (146% of design). This was reduced and balanced to 444 CFM (98% of design).

Building pressure

Final building pressure was measured as +0.0165" and calculated as net +373 CFM which is slightly positive.

Final Remarks:

Overall the airflow and balance of the space was greatly improved. Key points and findings are described below.

1. Building was initially around -800 CFM negative due to the exhaust fan being high on flow and the OA damper for the RTU being nearly closed.
2. After completion of balancing the net airflow in the building was balanced to +373 CFM and 0.0165" which is slightly positive.
3. The RTU was initially 73% of design was improved to 89% of design. (ideally would be at least 90%). Unable to increase airflow further without causing the motor overamp. Captive Aire confirmed the unit should operate fine at 89% and they can adjust the discharge temperature remotely if needed.
4. The diffusers in the employee area are low on overall flow. All dampers are fully open in this area. Unable to push air to them without decreasing the total flow of the RTU below design.

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	WHOLE STORE	6000	5353	5200	4536	800	817	13.3%	15.3%						
EF-1	RESTROOMS													450	444
TOTALS		6000	5353	5200	4536	800	817			0	0	0	0	450	444

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	800	817
TOTAL EXHAUST	450	444
NET AIRFLOW	350	373

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H ₂ O)
FRONT	0.015
SIDE	
REAR	0.018
AVERAGE	0.0165

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: Daybreak Market Wesley Chapel, FL

System/Unit: AHU/RTU

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Asset: RTU1

AREA:WHOLE STORE

Unit Data		
	Design	Actual
MFG	CARRIER	CAPTIVEAIRE
Serial Num	-	6547192
Model Num	50HC**17	CAS-HVAC3-E.604-24-15T
Type	RTU	DOAS
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	4
OA Filter Size 1	-	16x25x2
Num Final Filter 1	-	8
Final Filter Size 1	-	20x25x2

Motor Data		
	Design	Actual
Motor MFG	-	TECO WESTINGHOUSE
Frame	-	213T
Horsepower	-	7.5
Motor Rpm	-	1755
Phase	3	3
Rated Voltage	480	230/460
Rated Amperage	-	19.1/9.55

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
Belt Alignment	DD

Test Data		
	Design	Actual
SF CFM	6000	5353
SF RPM	-	1667
RA CFM	5200	4536
OA CFM	800	817
RL Voltage	-	485 VFD
RL Amperage	-	9.2 VFD
SF Rotation	-	CCW
SF System SetPt	-	57 HZ
RA Damper Position	-	5.9 V
Min OA Damper Position	-	4.1 V
Min OA Damper Type	-	ECONOMIZER

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.11" in return / -0.66" at door
Fan Suction SP	-	-1.30"
Fan Discharge SP	-	0.5" average
Total ESP	0.80"	0.61"
Fan Total SP	-	2.15"

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

Unit Data - PHOTO LOG



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Completed By: Mark Johnson on 11/06/2024

Notes:
Windy conditions on roof when measuring OA.

Written By: Will Turnbough on 11/07/2024



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Project: Daybreak Market Wesley Chapel, FL

AHU/RTU



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Diffuser Supply (GRD)

RTU1/WHOLE STORE

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	SALES	SD1	10"	250	1	307	350	296	118.4
SGRD2	SALES	SD1	10"	300	1	281	320	326	108.7
SGRD3	SALES	SD1	10"	300	1	193	220	266	88.7
SGRD4	SALES	SD1	10"	350	1	237	270	269	76.9
SGRD5	SALES	SD1	10"	350	1	268	306	368	105.1
SGRD6	SALES	SD1	10"	300	1	226	258	306	102.0
SGRD7	SALES	SD1	10"	300	1	210	239	253	84.3
SGRD8	SALES	SD1	10"	250	1	161	184	210	84.0
SGRD9	SALES	SD1	10"	250	1	94	107	196	78.4
SGRD10	SALES	SD1	10"	250	1	340	388	313	125.2
SGRD11	SALES	SD1	10"	250	1	429	489	259	103.6
SGRD12	SALES	SD1	10"	250	1	324	369	267	106.8
SGRD13	SALES	SD1	10"	250	1	293	334	267	106.8
SGRD14	COUNTER	SD2	10"	350	1	122	139	178	50.9
SGRD15	OFFICE	SD2	6"	100	1	76	87	78	78.0
SGRD16	OFFICE	SD2	10"	100	1	109	124	104	104.0
SGRD17	SUPPORT	SD2	10"	275	1	167	190	212	77.1
SGRD18	SUPPORT	SD2	10"	275	1	156	178	192	69.8
SGRD19	SUPPORT	SD2	10"	225	1	145	165	181	80.4
SGRD20	SUPPORT	SD2	10"	225	1	139	158	180	80.0
SGRD21	HALL	SD2	8"	200	1	64	73	97	48.5
SGRD22	HALL	SD2	8"	150	1	121	138	161	107.3
SGRD23	WOMEN RR	SD3	6"	100	1	52	59	62	62.0
SGRD24	JANITOR	SD3	8"	200	1	99	113	170	85.0
SGRD25	MEN RR	SD3	8"	150	1	122	139	142	94.7
Total				6000		4735	5397	5353	89.22%

Asset	Notes	Date	Written By
SGRD15	Verified all diffusers in employee area were fully open. Unable to push air to them without reducing total airflow below design and being a detriment to the overall unit performance.	11/07/2024	Will Turnbough



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System/Unit: FAN - Exhaust

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Asset: EF1

AREA:RESTROOMS/JANITOR

Unit Data		
	Design	Actual
MFG	GREENHECK	GREENHECK
Model Num	G-090-VG	G-090-VG-1-17-X
Serial Num	-	24462777
Type	-	DOWNBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	Actual
Motor MFG	-	VARI-GREEN
Frame	-	NL
Horsepower	-	1/10
Motor Rpm	-	300-1750
Phase	1	1
Voltage (rated)	120	115
Amperage (rated)	-	1.38
Service Factor	-	NL

Test Data		
	Design	Actual
CFM	450	444
Fan RPM	1542	1052
Fan Rotation	-	CW
Motor RPM	-	1052
System SetPt	-	5.0 POTENTIOMETER
RL Voltage	-	121
RL Amperage	-	0.3
Total ESP	0.50"	0.04"
Fan Inlet SP	-	-0.04"
Fan Discharge SP	-	ATM

Completed By: Mark Johnson on 11/06/2024



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FAN - Exhaust

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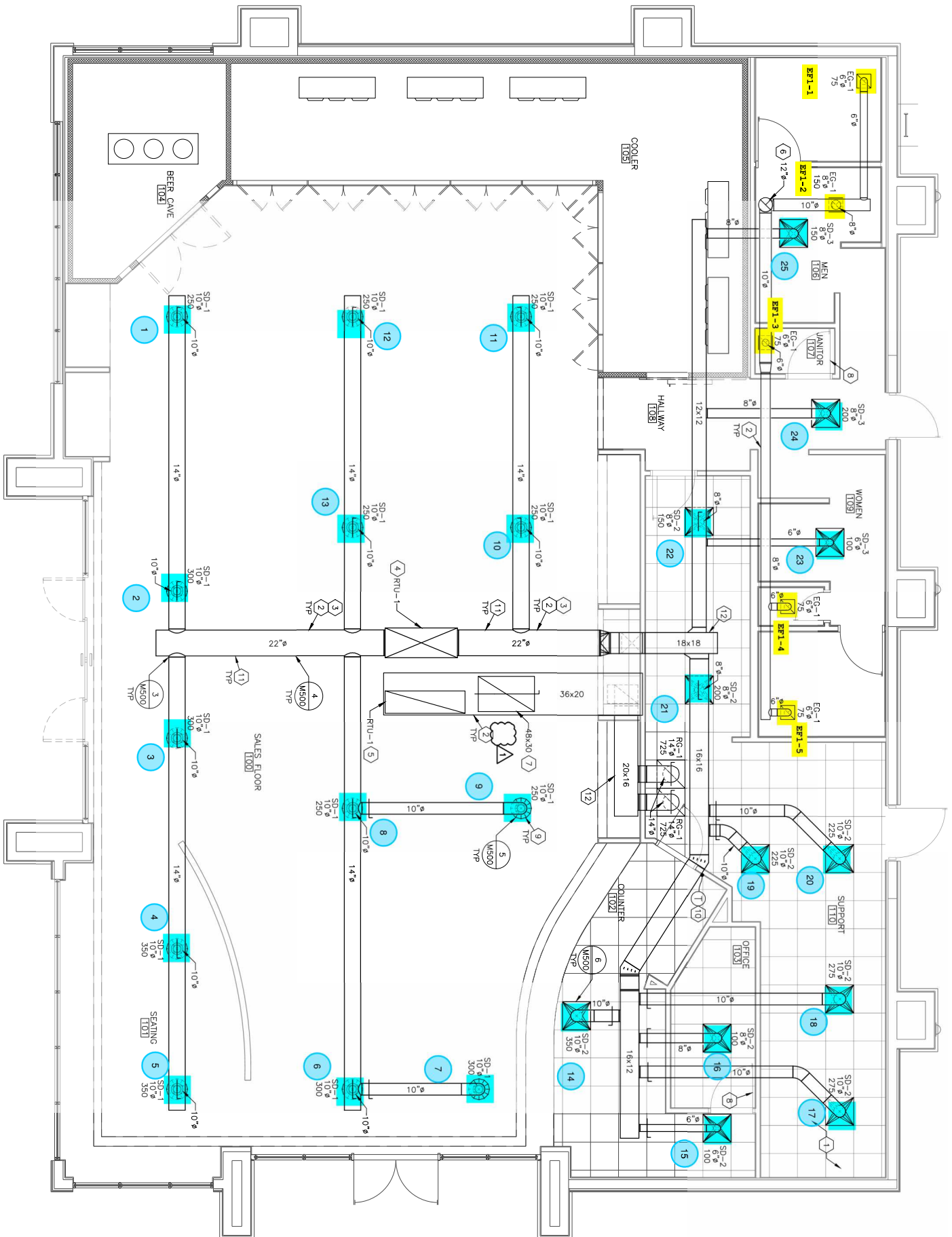


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Diffuser Ret/Exh (GRD)

EF1/RESTROOMS/JANITOR

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
EGRD1	MEN RR	EG1	6"	75	1	87	75	75	100.0
EGRD2	MEN RR	EG1	8"	150	1	274	98	146	97.3
EGRD3	JANITOR	EG1	6"	75	1	125	217	76	101.3
EGRD4	WOMEN RR	EG1	6"	75	1	93	67	73	97.3
EGRD5	WOMEN RR	EG1	6"	75	1	81	75	74	98.7
Total				450		660	532	444	98.67%



1 MECHANICAL PLAN