

Report By:  
Double T Balancing Company  
5910 S. University Blvd.  
Greenwood Village, CO 80121



**I N T E L L I G E N C E**

For:  
National TAB  
1126 Swift Street  
North Kansas City, MO 64116

**Report: TAB REPORT**  
**Function: Test, Adjust, & Balance**  
**Date: 01/17/2024**

# **PROJECT**

**01-15-24 SWEETGREEN - DENVER, CO  
(TENNYSON) TAB, IAQ**

3985 N TENNYSON ST

DENVER, CO 80212

## Client

Snyder Building Construction  
3535 SOUTH SHERMAN ST

ENGLEWOOD, CO 80113

### 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	DINING	2200	2250	1530	1570	670	680	30.5%	30.2%						
RTU-2	KITCHEN	3400	3173	2970	2717	430	456	12.6%	14.4%						
EF-1	KITCHEN											750	724		
EF-2	RESTROOMS													225	238
<b>TOTALS</b>		5600	5423	4500	4287	1100	1136			0	0	750	724	225	238

#### NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	1100	1136
TOTAL EXHAUST	975	962
<b>NET AIRFLOW</b>	125	174

NOTES:

## 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 of  $-0.02''$  wc to  $+0.02''$  wc and that the pressure measurement coincides with the actual and design net airflow. Any deviations from these standards are noted throughout the report.

The hood capture was tested at the perimeter of the hood and the cook top level with the equipment heat on to ensure satisfactory hood capture and containment.

## AIR APPARATUS TEST REPORT

PROJECT NAME:	1301 - Sweetgreen						
EQUIPMENT / SYSTEM:	RTU-1						
<b>UNIT INFORMATION</b>							
		<b>DESIGN</b>			<b>ACTUAL</b>		
MANUFACTURER		Carrier			Carrier		
MODEL #		48HCFD08			48TCFM09A2A6		
SERIAL #					2922P34095		
LOCATION / SERVICE							
<b>FAN INFORMATION</b>							
		<b>DESIGN</b>			<b>ACTUAL</b>		
Total Airflow (CFM)		2,200			2,250		
Total of Terminals (CFM)		2,200			2,250		
Return Airflow (CFM)		1,530			1,570		
Outside Airflow (CFM)		670			680		
Total Static Pressure (in. w.g.)					1.09		
External Static Pressure (in. w.g.)		1.00			0.99		
Fan Speed (RPM / Setpoint)					768		
VFD Speed (Hz)					n/a		
OA Damper Postion (% Open)					30%		
<b>MOTOR INFORMATION</b>							
		<b>DESIGN / NAMEPLATE</b>			<b>ACTUAL</b>		
Manufacturer / Frame - Nameplate					Marathon / 56HZ		
Horse Power (HP)		3.70			n/g		
Brake Horse Power (BHP)					1.87		
Volts	Phase	460	3	477	474	474	
Full Load Amps		3.40			2.35	2.37	2.36
Corrected Nameplate Amps		-			3.29		
Motor Speed (RPM / Setting)					1,725		
Service Factor		-			1.15		
Current Overload Size/Setting		-			n/a		
<b>DRIVE INFORMATION</b>							
		<b>DESIGN</b>			<b>ACTUAL</b>		
Motor Sheave OD					1VL44		
Motor Sheave Bore Size					0.625		
Motor Sheave Adjustment (PD)					4 TO		
Fan Sheave OD					AFD74		
Fan Sheave Bore Size					1		
Belt Size (Inches) and Quantity					(1) A48		
Center to Center Distance (Inches)					16.6		
<b>FILTER INFORMATION</b>							
<b>DESIGN (MERV Rating)</b>		<b>BANK #1 Style/Size(Qty)</b>			<b>BANK #2 Style/Size(Qty)</b>		
Merv 8		(4) 16x16x2					



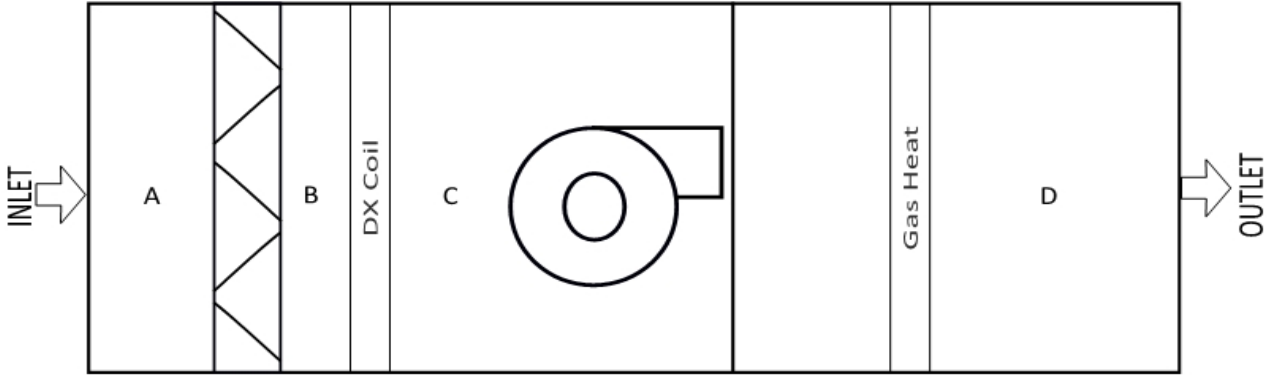
## RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:		1301 - Sweetgreen											
EQUIPMENT / SYSTEM:		RTU-1 - Outside Air											
<b>DUCT TRAVERSE INFORMATION</b>													
Duct Zone:		RTU-1				Required CFM:		670		Required FPM:		177	
Duct Size:		34	X	16	WxH"	Area:		3.78		Static Pressure:		-0.53 in.w.g.	
Instrument:		Velgrid		Corr Factor	1	Altitude:		5280 FT		Temperature:		n/a	
<b>DUCT TRAVERSE MEASUREMENTS</b>													
Velocity Total (FPM):		540			Velocity Average (FPM):			180			Actual Airflow (CFM):		<b>680</b>
POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height	
1	186	181	173									8.0	
2												24.0	
3												40.0	
4												56.0	
5												72.0	
6												88.0	
7												104.0	
8												120.0	
9												136.0	
10												152.0	
11												168.0	
Distance Width	5.7	17.0	28.3	39.7	51.0	62.3	73.7	85.0	96.3	107.7	119.0	Inches	
Totals	186	181	173	0	0	0	0	0	0	0	0		

Comments: \_\_\_\_\_  
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## STATIC PRESSURE PROFILE

PROJECT NAME:	1301 - Sweetgreen
EQUIPMENT / SYSTEM:	RTU-1 - Static Pressure Profile
<b>SYSTEM INFORMATION</b>	
Static Pressure Profile Setup:	FilCoilFanDis
Design Airflow (CFM)	2200
Measured Airflow (CFM)	2250



<b>ESP:</b>	<b>0.99</b>	<b>TSP:</b>	<b>1.09</b>
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<i>STATIC PRESSURE READINGS (in. w.g.)</i>											
Location	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>	<b>K</b>
Supply	0.53	-0.59	-0.63	0.46							

Comments: \_\_\_\_\_

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## AIR APPARATUS TEST REPORT

PROJECT NAME:	1301 - Sweetgreen						
EQUIPMENT / SYSTEM:	RTU-2						
<b>UNIT INFORMATION</b>							
		<b>DESIGN</b>			<b>ACTUAL</b>		
MANUFACTURER		Carrier			Carrier		
MODEL #		48HCFD08			48HCFD08A2A6		
SERIAL #					2822P32719		
LOCATION / SERVICE							
<b>FAN INFORMATION</b>							
		<b>DESIGN</b>			<b>ACTUAL</b>		
Total Airflow (CFM)		3,400			3,173		
Total of Terminals (CFM)		3,400			3,173		
Return Airflow (CFM)		2,970			2,717		
Outside Airflow (CFM)		430			456		
Total Static Pressure (in. w.g.)					1.84		
External Static Pressure (in. w.g.)		1.00			1.48		
Fan Speed (RPM / Setpoint)					939		
VFD Speed (Hz)					n/a		
OA Damper Postion (% Open)					13%		
<b>MOTOR INFORMATION</b>							
		<b>DESIGN / NAMEPLATE</b>			<b>ACTUAL</b>		
Manufacturer / Frame - Nameplate					Marathon / 56HZ		
Horse Power (HP)		3.70			n/g		
Brake Horse Power (BHP)					2.26		
Volts	Phase	460	3	477	474	474	
Full Load Amps		3.40			2.76	2.93	2.85
Corrected Nameplate Amps		-			3.29		
Motor Speed (RPM / Setting)					1,725		
Service Factor		-			1.15		
Current Overload Size/Setting		-			n/a		
<b>DRIVE INFORMATION</b>							
		<b>DESIGN</b>			<b>ACTUAL</b>		
Motor Sheave OD					1VL44		
Motor Sheave Bore Size					0.625		
Motor Sheave Adjustment (PD)					1 TO		
Fan Sheave OD					AFD74		
Fan Sheave Bore Size					1		
Belt Size (Inches) and Quantity					(1) A48		
Center to Center Distance (Inches)					16.3		
<b>FILTER INFORMATION</b>							
<b>DESIGN (MERV Rating)</b>		<b>BANK #1 Style/Size(Qty)</b>			<b>BANK #2 Style/Size(Qty)</b>		
Merv 8		(4) 16x16x2					



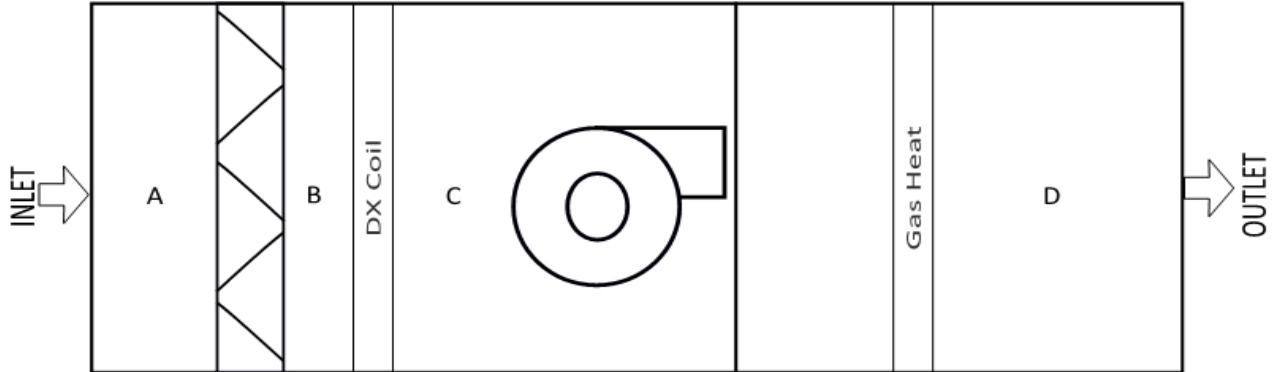
## RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:		1301 - Sweetgreen											
EQUIPMENT / SYSTEM:		RTU-2 - Outside Air											
<b>DUCT TRAVERSE INFORMATION</b>													
Duct Zone:		RTU-2				Required CFM:		430		Required FPM:		114	
Duct Size:		34	X	16	WxH"	Area:		3.78		Static Pressure:		-0.48 in.w.g.	
Instrument:		Velgrid		Corr Factor	1	Altitude:		5280 FT		Temperature:		n/a	
<b>DUCT TRAVERSE MEASUREMENTS</b>													
Velocity Total (FPM):		362			Velocity Average (FPM):			121			Actual Airflow (CFM):		<b>456</b>
POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height	
1	125	120	117									8.0	
2												24.0	
3												40.0	
4												56.0	
5												72.0	
6												88.0	
7												104.0	
8												120.0	
9												136.0	
10												152.0	
11												168.0	
Distance Width	5.7	17.0	28.3	39.7	51.0	62.3	73.7	85.0	96.3	107.7	119.0	Inches	
Totals	125	120	117	0	0	0	0	0	0	0	0		

Comments: \_\_\_\_\_  
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## STATIC PRESSURE PROFILE

PROJECT NAME:	1301 - Sweetgreen
EQUIPMENT / SYSTEM:	RTU-2 - Static Pressure Profile
<b>SYSTEM INFORMATION</b>	
Static Pressure Profile Setup:	FilCoilFanDis
Design Airflow (CFM)	3400
Measured Airflow (CFM)	3173



**ESP: 1.48**

**TSP: 1.84**

<i>STATIC PRESSURE READINGS (in. w.g.)</i>											
Location	A	B	C	D	E	F	G	H	I	J	K
Supply	-0.48	-0.69	-0.84	1.00							

Comments: \_\_\_\_\_  
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## FAN TEST REPORT

PROJECT NAME:	1301 - Sweetgreen		
EQUIPMENT / SYSTEM:	EF-1		
UNIT INFORMATION			
		DESIGN	ACTUAL
MANUFACTURER		Captive Aire	Captive Aire
MODEL #		SIF11DD	SIF11DD
SERIAL #			6103722
LOCATION / SERVICE			Hood
FAN INFORMATION			
		DESIGN	ACTUAL
Total Airflow (CFM)		750	724
Total of Terminal Airflows (CFM)		750	724
External Static Pressure		1. in.w.g.	-1.17 in.w.g.
SP Reading - Intake			-0.06 in.w.g.
SP Reading - Discharge			1.11 in.w.g.
Fan Speed (RPM / Setpoint)			D.D. / Speed Setting 99P
MOTOR INFORMATION			
		DESIGN / NAMEPLATE	ACTUAL
Manufacturer / Frame - Nameplate			nac
Horse Power (HP)		0.75	0.75
Brake Horse Power (BHP)			0.56
Volts	Phase	120	1
Full Load Amps		8.90	4.83
Corrected Nameplate Amps		-	8.83
Motor Speed (RPM / Setting)			nac
Service Factor		-	nac
Current Overload Size/Setting		-	Speed setting 99P

Comments: Individual grille read with Flowhood

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## FAN TEST REPORT

PROJECT NAME:	1301 - Sweetgreen			
EQUIPMENT / SYSTEM:				
UNIT INFORMATION				
		DESIGN		ACTUAL
MANUFACTURER		Greenheck		Captive Aire
MODEL #		SP-97-VG		SIF10DD
SERIAL #				6103722
LOCATION / SERVICE				Restrooms
FAN INFORMATION				
		DESIGN		ACTUAL
Total Airflow (CFM)		225		238
Total of Terminal Airflows (CFM)		225		238
External Static Pressure		0.5 in.w.g.		0.3 in.w.g.
SP Reading - Intake				-0.18 in.w.g.
SP Reading - Discharge				0.12 in.w.g.
Fan Speed (RPM / Setpoint)				D.D. / Speed Setting 42P
MOTOR INFORMATION				
		DESIGN / NAMEPLATE		ACTUAL
Manufacturer / Frame - Nameplate				nac
Horse Power (HP)		0.25		0.25
Brake Horse Power (BHP)				0.14
Volts	Phase	120	1	121
Full Load Amps		2.90		1.24
Corrected Nameplate Amps		-		2.88
Motor Speed (RPM / Setting)				nac
Service Factor		-		nac
Current Overload Size/Setting		-		Speed Setting 42P

Comments: \_\_\_\_\_

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