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**Report: TAB REPORT**  
**Function: Test, Adjust, & Balance**  
**Date: 02/22/2023**

**TRUE FOOD KITCHEN #34 - GARDEN CITY, NY  
(ROOSEVELT FIELD MALL) REVIVE**

630 Old Country Rd Suite 1040B  
Garden City, NY 11530

**Client**

True Food Kitchen  
4455 E Camelback Rd, Ste B100

Phoenix, AZ 85018

## Summary

### Background

Purpose of the visit to True Food Garden City is to address complaints of negative pressure. True Food is a tenant inside the Roosevelt Field Mall. True Food's HVAC systems consist of an RTU that serves VAV's and FPB's throughout the space. There is also a restroom exhaust fan, hood exhaust, dish exhaust, and a hood MUA.

### Findings:

1. The pressure at the completion of balancing was slightly negative (-0.0179") when the RTU was tested at max flow. This is negative however it is within acceptable tolerance (-0.02" to +0.02"). The net airflow measurement is positive which indicates the mall systems may be affecting True Food pressurization. Unable to determine the source of the influence.
2. Reviewing plans prior to arrival, it was a concern that the powered exhaust fan may be turning on at the wrong times and a cause of the negative pressure. However it was successfully confirmed the fan was not turning on.
3. The RTU is a variable system and during normal operation the fan speed will change depending on VAV/FPB demand. When the RTU goes to min speed, the outside air will go from maximum setpoint of 3291 CFM to approximately 920 CFM. As a result that causes the building pressure to go from +691 CFM to -1680 CFM which is a very negative pressure.
4. Hood exhaust airflow is below design. This will aid the overall pressurization of the space and unless there are complaints about smoke loss, no further action is required. The MUA is also below design however since the hood exhaust is low these two deficiencies offset each other.

### Recommendations:

The RTU is a variable system and modulates from high to low speed based on demand on the VAV's/FPB's. When the RTU is in high speed the building pressure is slightly negative to neutral. But when it's in low speed the net airflow in the building would go really negative. The net airflow in True Food space is calculated as +691 CFM in max speed and -1680 CFM in min speed.

Recommended eliminating the minimum flows of the VAV's/FPB's during occupied hours so that they only ever run at a max setpoint which would prevent the RTU from ever modulating speeds. If there are comfort issues during summer or winter due to this change, this may need to be reevaluated. During unoccupied hours, the VAV's/FPB's could operate at a minimum setpoint if desired.

The controls contractor completed this change. Recommend monitoring to see if the pressure issue has improved.



### 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		11450	11288	8350	7997	3100	3291	27.1%	29.2%						
MUA-1	HOOD 1-3									6650	5148				
GEF-1	HOODS 1-3											7760	6284		
DEF-1	DISH HOOD											1050	1084		
EF-1	RESTROOMS													400	380
<b>TOTALS</b>		11450	11288	8350	7997	3100	3291			6650	5148	8810	7368	400	380

#### NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	9750	8439
TOTAL EXHAUST	9210	7748
<b>NET AIRFLOW</b>	<b>540</b>	<b>691</b>

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H <sub>2</sub> O)
FRONT	-0.024
SIDE	
REAR	
<b>AVERAGE</b>	<b>-0.024</b>

#### FINAL CHECKS

- ACTUAL NET AIRFLOW COINCIDES WITH DESIGN: ✓

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- MEASURED PRESSURES COINCIDES WITH ACTUAL NET AIRFLOW: ✗

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

NOTES:

# Fan Test Sheet

<b>Project:</b>	True Food Kitchen	<b>System:</b>	RTU-1
<b>Location:</b>	Roof	<b>Serves:</b>	Whole space
<b>Tech:</b>	Luca Damaro	<b>Date:</b>	02/15/23

Fan Data	
Make:	Lennox
Model:	LGH420H4MP2Y
Serial No.:	5619M00502

Motor Data			
HP:	15.00	RPM:	1775
Phase:	3	SF:	1.15
	Rated	Actual	
Volts:	230/460	210vfd	
Amps:	36/18	35.1vfd	
Hz:	60	60vfd	

Air Flow Data		
	Design	Actual
Total	11,450	11,288

Drive Data		
	Size	Bore
Motor	7.00	254T
Fan	12.25	1.75
Belts	5VX830	
Centerline Dist.	25.50	
	Design	Actual
Fan RPM		1938

Static Pressure		
Total Design:	2.00	in.w.c.
Suction:	-1.74	in.w.c.
Discharge:	1.11	in.w.c.
Total Actual:	2.85	in.w.c.

Duct					Design		Actual				Notes
No.	Height	Width	Insul.	Area	FPM	CFM	AFPM	CFM	SP	%	
1	24	29		4.83			377	1,822			OA-1
2	24	29		4.83			304	1,469			OA-2
					321	3,100		3,291		106%	

Notes:

Minimum outside air damper position 15%.

# Outlet Test Sheet

<b>Project:</b>	True Food Kitchen		
<b>System:</b>	RTU-1	<b>Location:</b>	Ground Floor
<b>Tech:</b>	Luca Damaro	<b>Date:</b>	02/15/23

Area Served	Outlet					Design		Final		Notes
	Drwg	No.	Type	Size	Ak	FPM	CFM	FPM	CFM	
FPVAV-1	Add:		Size:	12	CF:	1.05	Min/Max:	360	1200	
			Inlet	12	1891	0.403	1200	0.378	1162	
FPVAV-2	Add:		Size:	12	CF:	0.99	Min/Max:	310	875	
			Inlet	12	1891	0.214	875	0.223	894	
FPVAV-3	Add:		Size:	12	CF:	1.06	Min/Max:	310	875	
			Inlet	12	1891	0.214	875	0.188	821	
FPVAV-4	Add:		Size:	12	CF:	0.94	Min/Max:	310	1175	
			Inlet	12	1891	0.386	1175	0.35	1119	
FPVAV-5	Add:		Size:	12	CF:	1.04	Min/Max:	310	1000	
			Inlet	12	1891	0.28	1000	0.27	982	
VAV-6	Add:		Size:	14	CF:	1.73	Min/Max:	615	2000	
1st Floor	M1	30	CD	10	DR		400		369	
1st Floor	M1	31	CD	10	DR		400		402	
1st Floor	M1	32	CD	10	DR		400		409	
1st Floor	M1	33	CD	10	DR		400		385	
1st Floor	M1	34	CD	10	DR		400		433	
							2000		1998	
VAV-7	Add:		Size:	14	CF:	1.92	Min/Max:	500	1800	
1st Floor	M1	35	Hood	50x6	DR		125		127	
1st Floor	M1	36	Hood	50x6	DR		125		129	
1st Floor	M1	37	Hood	50x6	DR		125		133	
1st Floor	M1	38	Hood	50x6	DR		125		127	
1st Floor	M1	39	Hood	50x6	DR		125		129	

# Outlet Test Sheet

<b>Project:</b>	True Food Kitchen		
<b>System:</b>	RTU-1	<b>Location:</b>	Ground Floor
<b>Tech:</b>	Luca Damaro	<b>Date:</b>	02/15/23

Area Served	Outlet					Design		Final		Notes
	Drwg	No.	Type	Size	Ak	FPM	CFM	FPM	CFM	
1st Floor	M1	40	Hood	50x6	DR		125		122	
1st Floor	M1	41	Hood	50x6	DR		135		138	
1st Floor	M1	42	Hood	50x6	DR		135		133	
1st Floor	M1	43	Hood	50x6	DR		135		125	
1st Floor	M1	44	Hood	50x6	DR		135		137	
1st Floor	M1	45	Hood	50x6	DR		135		141	
1st Floor	M1	46	Hood	50x6	DR		125		119	
1st Floor	M1	47	Hood	50x6	DR		125		117	
1st Floor	M1	48	Hood	50x6	DR		125		122	
							1800		1799	
VAV-8	Add:		Size:	14	CF:	2.42	Min/Max:	600	2000	
1st Floor	M1	49	CD	10	DR		400		398	
1st Floor	M1	50	CD	10	DR		400		377	
1st Floor	M1	51	CD	10	DR		400		405	
1st Floor	M1	52	CD	10	DR		400		399	
1st Floor	M1	53	CD	10	DR		400		422	
							2000		2001	
FPVAV-9	Add:		Size:	6	CF:	1.03	Min/Max:	70	225	
			Inlet	6	448	0.252	225	0.249	223	
FPVAV-10	Add:		Size:	6	CF:	1.44	Min/Max:	90	300	
			Inlet	6	448	0.448	300	0.416	289	
							11450		11288	

Notes:

# Outlet Test Sheet

<b>Project:</b>	True Food Kitchen		
<b>System:</b>	RTU-1	<b>Location:</b>	Ground Floor
<b>Tech:</b>	Luca Damaro	<b>Date:</b>	02/15/23

Area Served	Outlet					Design		Final		Notes
	Drwg	No.	Type	Size	Ak	FPM	CFM	FPM	CFM	
FPVAV-1	Add:		Size:	12				Fan Speed:	0.7	
1st Floor	M1	1	LD	1slx4	0.58	430	250	433	252	
1st Floor	M1	2	LD	1slx4	DR		100		93	
1st Floor	M1	3	LD	12x6	0.35	574	200	519	181	
1st Floor	M1	4	LD	12x6	0.35	287	100	288	100	
1st Floor	M1	5	SG	12x6	0.35	502	175	488	170	
1st Floor	M1	6	SG	12x6	0.35	502	175	533	186	
1st Floor	M1	7	LD	1slx2	DR		200		189	
							1200		1171	
FPVAV-2	Add:		Size:	12				Fan Speed:	0.46	
1st Floor	M1	8	SG	12x6	0.35	502	175	501	175	
1st Floor	M1	9	SG	12x6	0.35	502	175	473	165	
1st Floor	M1	10	SG	12x6	0.35	502	175	493	172	
1st Floor	M1	11	SG	12x6	0.35	502	175	499	174	
1st Floor	M1	12	SG	12x6	0.35	502	175	502	175	
							875		860	
FPVAV-3	Add:		Size:	12				Fan Speed:	0.5	
1st Floor	M1	13	LD	1slx4	DR		125		130	
1st Floor	M1	14	LD	1slx4	DR		125		121	
1st Floor	M1	15	LD	1slx4	DR		125		120	
1st Floor	M1	16	LD	1slx4	DR		125		133	
1st Floor	M1	17	LD	1slx4	DR		125		120	
1st Floor	M1	18	LD	1slx4	DR		125		117	
1st Floor	M1	19	CD		DR		125		124	
							875		865	
FPVAV-4	Add:		Size:	12				Fan Speed:	0.58	
1st Floor	M1	20	SG	12x6	0.35	717	250	655	228	

# Outlet Test Sheet

<b>Project:</b>	True Food Kitchen		
<b>System:</b>	RTU-1	<b>Location:</b>	Ground Floor
<b>Tech:</b>	Luca Damaro	<b>Date:</b>	02/15/23

Area Served	Outlet					Design		Final		Notes
	Drwg	No.	Type	Size	Ak	FPM	CFM	FPM	CFM	
1st Floor	M1	21	SG	12x6	0.35	717	250	755	263	
1st Floor	M1	22	SG	12x6	0.35	717	250	659	230	
1st Floor	M1	23	SG	12x6	0.35	717	250	749	261	
1st Floor	M1	24	CD	8	DR		175		187	
							1175		1169	
FPVAV-5	Add:		Size:					Fan Speed:	0.54	
1st Floor	M1	25	CD	8	DR		200		189	
1st Floor	M1	26	CD	8	DR		200		200	
1st Floor	M1	27	CD	8	DR		200		214	
1st Floor	M1	28	CD	8	DR		200		207	
1st Floor	M1	29	CD	8	DR		200		183	
							1000		993	
FPVAV-9	Add:		Size:					Fan Speed:		Fan remains at max speed; speed does not change from BMS nor speed dial
1st Floor	M1	54	CD	6	DR		50		185	
1st Floor	M1	55	CD	6	DR		100		239	
1st Floor	M1	56	CD	6	DR		25		177	
1st Floor	M1	57	CD	6	DR		50		153	
							225		754	
FPVAV-10	Add:		Size:	6				Fan Speed:		Fan remains at max speed; speed does not change from BMS nor speed dial
1st Floor	M1.1	58	CD	8	DR		50		131	
1st Floor	M1.1	59	CD	8	DR		125		164	
1st Floor	M1.1	60	CD	8	DR		125		222	
							300		517	

Notes:

# Fan Test Sheet

<b>Project:</b>	True Food Kitchen	<b>System:</b>	MUA-1
<b>Location:</b>	Roof	<b>Serves:</b>	Kitchen
<b>Tech:</b>	Luca Damaro	<b>Date:</b>	02/21/23

Fan Data	
Make:	CaptiveAire
Model:	A4-D1000-920-MPU
Serial No.:	4012679

Air Flow Data		
	Design	Actual
Total	6,655	5148

Static Pressure		
Total Design:	0.80	in.w.c.
Suction:	-0.46	in.w.c.
Discharge:	1.14	in.w.c.
Total Actual:	1.59	in.w.c.

Motor Data			
HP:	5.0	RPM:	1740
Phase:	3	SF:	1.15
	Rated	Actual	
Volts:	230/460	220vfd	
Amps:	13.1/6.55	8.6vfd	
Hz:	60	66vfd	

Drive Data		
	Size	Bore
Motor	4.00	184T
Fan	10.50	1.50
Belts	BX78	
Centerline Dist.	28.00	
	Design	Actual
Fan RPM		699

**Notes:**

Airflow measured with several different methods. Measuring at the PSP was 6361 CFM however the other readings were all lower. Most reliable airflow reading is reported which was 5148 CFM.



# Fan Test Sheet

<b>Project:</b>	True Food Kitchen	<b>System:</b>	DEF-1
<b>Location:</b>	Roof	<b>Serves:</b>	Dish exhaust
<b>Tech:</b>	Luca Damaro	<b>Date:</b>	02/15/23

Fan Data	
Make:	CaptiveAire
Model:	USB11DD-RM
Serial No.:	4012679

Motor Data			
HP:	0.50	RPM:	1800
Phase:	1	SF:	1.15
	Rated	Actual	
Volts:	115	128	
Amps:	7.90	4.5	
Hz:	60	60	

Air Flow Data		
	Design	Actual
Total	1,050	1,084

Drive Data		
	Size	Bore
Motor		
Fan		
Belts	Direct Drive	
Centerline Dist.		
	Design	Actual
Fan RPM		

Static Pressure		
Total Design:	1.00	in.w.c.
Suction:	-0.79	in.w.c.
Discharge:	0.31	in.w.c.
Total Actual:	1.09	in.w.c.

Duct					Design		Actual				Notes
No.	Height	Width	Insul.	Area	FPM	CFM	AFPM	CFM	SP	%	
1	12	12		1.00	1,050	1,050	1,084	1,084	-0.77	103%	Suction duct
2											

Notes:



# Fan Test Sheet

<b>Project:</b>	True Food Kitchen	<b>System:</b>	EF-1
<b>Location:</b>	Roof	<b>Serves:</b>	Restroom
<b>Tech:</b>	Luca Damaro	<b>Date:</b>	02/21/23

Fan Data	
Make:	Greenheck
Model:	USFD108B1
Serial No.:	16057446

Motor Data			
HP:	0.25	RPM:	
Phase:	1	SF:	1.15
	Rated	Actual	
Volts:	115	114	
Amps:	2.85	1.8	
Hz:	60	60	

Air Flow Data		
	Design	Actual
Total	400	380

Drive Data		
	Size	Bore
Motor		
Fan		
Belts	Direct Drive	
Centerline Dist.		
	Design	Actual
Fan RPM		

Static Pressure		
Total Design:	0.75	in.w.c.
Suction:	-0.62	in.w.c.
Discharge:	0.15	in.w.c.
Total Actual:	0.78	in.w.c.

Duct					Design		Actual				Notes
No.	Height	Width	Insul.	Area	FPM	CFM	AFPM	CFM	SP	%	
1	8	8		0.44	900	400	855	380		95%	Duct
2											

Notes:



# Fan Test Sheet

<b>Project:</b>	True Food Kitchen	<b>System:</b>	GEF-1
<b>Location:</b>	Roof	<b>Serves:</b>	Grease exhaust
<b>Tech:</b>	Luca Damaro	<b>Date:</b>	02/15/23

Fan Data	
Make:	CaptiveAire
Model:	USBI36DD-RM
Serial No.:	4012679

Air Flow Data		
	Design	Actual
Total	7,760	6,284

Static Pressure		
Total Design:	2.00	in.w.c.
Suction:	-3.07	in.w.c.
Discharge:	0.24	in.w.c.
Total Actual:	3.30	in.w.c.

Motor Data			
HP:	10.0	RPM:	1175
Phase:	3	SF:	1.15
	Rated	Actual	
Volts:	230	220vfd	
Amps:	25.70	28.50	
Hz:	60	43vfd	

Drive Data		
	Size	Bore
Motor		
Fan		
Belts	Direct Drive	
Centerline Dist.		
	Design	Actual
Fan RPM		

Notes:

Fan low flow, high static.









