Report By:
Ferris Street Services
308 Ferris Street
Peekskill, NY 10566

NATIONAL TAB

INTELLIGENCE

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

Report: TAB REPORT

Function: Test, Adjust, & Balance

Date: 11/27/2023

PROJECT

11-06-23 SHACK SHACK #1418 - NORTH BRUNSWICK TOWNSHIP, NJ

240 GRAND AVE

NORTH BRUNSWICK, NJ 08902

Client

Air Select

National TAB

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.

Kitchen Exhaust Hood & Associated Fans

Each kitchen exhaust fan was measured at the hood filter bay utilizing a velocity matrix and a manufacturer's correction factor. Each filter velocity is multiplied by the manufacturer's corrected area. The sum of these readings equals the total flow of the exhaust fans. The total flow of the exhaust was then adjusted to within tolerance of the design flow. . Any EF's that fell outside of this 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.

Issue List

- Hoods are hung too high
- OA to AC unit in managers office not balanced

11-06-23 SHACK SHACK #1418 - NORTH BRUNSWICK TOWNSHIP, NJ

Project Issue Information

Issue Name :	Hoods are hung too high		
Description :	The kitchen hoods are hung too high and need to be lowered. Plans show 71" but they appear to be hung at 80". Once lowered, recommend rebalancing the airflow.		
Created By :	National TAB	**Assigned To :**	National TAB - Will Turnbough
Status :	Open		
Priority :	High	**Asset Tag :**	
Originated Date :	12/12/2023 - Will Turnbough - National TAB		

11-06-23 SHACK SHACK #1418 - NORTH BRUNSWICK TOWNSHIP, NJ

Project Issue Information

Issue Name :	OA to AC unit in managers office not balanced		
Description :	Unable to balance the OA to the manager's office AC unit due to the unit not running on 11/21		
Created By :	National TAB	**Assigned To :**	National TAB - Will Turnbough
Status :	Open		
Priority :	Medium	**Asset Tag :**	
Originated Date :	12/12/2023 - Will Turnbough - National TAB		

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	KITCHEN	2825	2805	0	0	2825	2805	100.0%	100.0%						
RTU-2	DINING	3825	3769	2625	2494	1200	1275	31.4%	33.8%						
AC-1	OFFICE					40	0	-	-						
KEF-1	HOOD 1											700	693		
KEF-2	HOOD 2											700	702		
KEF-3	HOOD 3											700	681		
KEF-4	HOOD 4											700	681		
TX-1	RESTROOMS													350	337
TX-2	EM.P. RR													125	130
TOTALS		6650	6574	2625	2494	4065	4080			0	0	2800	2757	475	467

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	4065	4080
TOTAL EXHAUST	3275	3224
NET AIRFLOW	790	856

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H20)
FRONT	0.046
SIDE	0.055
REAR	0.045
AVERAGE	**0.0487**

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.

KITCHEN PRESSURIZATION (MUST BE NEGATIVE)

TOTALS	DESIGN	ACTUAL
TOTAL KITCHEN OA	2865	2805
TOTAL KITCHEN EXHAUST	2925	2887
NET AIRFLOW	-60	-82

Store Front

RTU-1

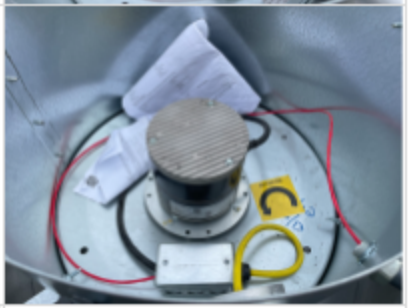
RTU-2

KEF-1

KEF-2

KEF-3

KEF-4



TX-1

TX-2

AC-1

Fan Test Sheet

Project:	Shake Shack North Brunswick Township	**System:**	RTU-1
Location:	Roof	**Serves:**	Kitchen
Instrument:	Shortridge ADM-860c	**Date:**	11/13/23

Fan Data	
Make:	CaptiveAire
Model:	CASRTU3-1.300-20-12.5T
Serial No.:	5734846

Motor Data			
HP:	7.50	RPM:	1755
Phase:	3	SF:	1.15
	Rated		Actual
Volts:	230/460		65vfd
Amps:	19.1/9.55		12.8vfd
Hz:	60		32vfd

Air Flow Data		
	Design	Actual
Total	2,825	2,805

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:	-0.65	in.w.c.
Discharge:	0.31	in.w.c.
Total Actual:	0.96	in.w.c.

Duct					**Design**		**Actual**				**Notes**
No.	**Height**	**Width**	**Insul.**	**Area**	**FPM**	**CFM**	**AFPM**	**CFM**	**SP**	**%**	
1	34	45		10.63	266	2,825	264	2,805		99%	OA Hood

Notes:

100% outside air unit.

Outlet Test Sheet

Project:	Shake Shack North Brunswick Township		
System:	RTU-1	**Location:**	Kitchen
Instrument:	Shortridge 8403	**Date:**	11/13/23

Area Served	Outlet					Design		Final		Notes
	Drwg	No.	Type	Size	Ak	FPM	CFM	FPM	CFM	
Kitchen	M-101	1	CD	8	DR		75		75	
Kitchen	M-101	2	CD	8	DR		300		277	
Kitchen	M-101	3	CD	8	DR		100		100	
Kitchen	M-101	4	CD	14	DR		400		387	
Kitchen	M-101	5	CD	14	DR		400		401	
Kitchen	M-101	6	CD	14	DR		400		411	
Kitchen	M-101	7	CD	14	DR		400		389	
Kitchen	M-101	8	CD	14	DR		450		442	
Kitchen	M-101	9	CD	8	DR		100		100	
Kitchen	M-101	10	CD	8	DR		100		104	
Kitchen	M-101	11	SR	12x6	0.35		100	273	96	
							2825		2782	

Notes:

Fan Test Sheet

Project:	Shake Shack North Brunswick Township	**System:**	RTU-2
Location:	Roof	**Serves:**	Dining
Instrument:	Shortridge ADM-860c	**Date:**	11/13/23

Fan Data	
Make:	CaptiveAire
Model:	CASRTU3-1.300-20-12.5T
Serial No.:	5734846

Air Flow Data		
	Design	Actual
Total	3,825	3,769
Outside Air	1,200	1,275

Static Pressure		
Total Design:	1.00	in.w.c.
Suction:	-1.03	in.w.c.
Discharge:	0.22	in.w.c.
Total Actual:	1.25	in.w.c.

Motor Data			
HP:	5.00	RPM:	1755
Phase:	3	SF:	1.15
	Rated		Actual
Volts:	230/460		158vfd
Amps:	13.6/6.8		11.2vfd
Hz:	60		45vfd

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

Duct					**Design**		**Actual**				**Notes**
No.	**Height**	**Width**	**Insul.**	**Area**	**FPM**	**CFM**	**AFPM**	**CFM**	**SP**	**%**	
1	34	45		10.63	113	1,200	120	1,275		106%	OA Hood

Notes:

Outside air minimum damper position 50%.

Outlet Test Sheet

Project:	Shake Shack North Brunswick Township		
System:	RTU-2	**Location:**	Dining
Instrument:	Shortridge 8403	**Date:**	11/13/23

Area Served	Outlet					Design		Final		Notes
	Drwg	No.	Type	Size	Ak	FPM	CFM	FPM	CFM	
Dining	M-101	12	SR	14x6	0.47	426	200	426	200	
Dining	M-101	13	SR	14x8	0.57	661	375	659	374	
Dining	M-101	14	SR	14x8	0.57	661	375	633	359	
Dining	M-101	15	SR	14x8	0.57	661	375	656	372	
Dining	M-101	16	SR	14x8	0.57	661	375	665	377	
Dining	M-101	17	SR	14x6	0.47	426	200	426	200	
Dining	M-101	18	SR	14x6	0.47	479	225	479	225	
Dining	M-101	19	SR	14x6	0.47	426	200	404	190	
Dining	M-101	20	SR	14x6	0.47	479	225	452	212	
Dining	M-101	21	SR	14x6	0.47	426	200	445	209	
Dining	M-101	22	SR	14x6	0.47	479	225	437	205	
Dining	M-101	23	SR	14x6	0.47	426	200	422	198	
Dining	M-101	24	SR	14x6	0.47	479	225	466	219	
Dining	M-101	25	SR	14x6	0.47	426	200	418	196	
Dining	M-101	26	SR	14x6	0.47	479	225	500	235	
							3825		3769	
Notes:										

Fan Test Sheet

Project:	Shake Shack North Brunswick Township	**System:**	KEF-1
Location:	Roof	**Serves:**	Hood 1
Instrument:	Shortridge ADM-860c	**Date:**	11/21/23

Fan Data	
Make:	CaptiveAire
Model:	DU50HFA
Serial No.:	6027062

Air Flow Data		
	Design	Actual
Total	700	693

Static Pressure		
Total Design:	1.00	in.w.c.
Suction:	Curb	in.w.c.
Discharge:	0.09	in.w.c.
Total Actual:		in.w.c.

Motor Data			
HP:	0.5	RPM:	1800
Phase:	1	SF:	1.15
	Rated		Actual
Volts:	208		209
Amps:	3.80		2.70
Hz:	60		60

Drive Data		
	Size	Bore
Motor		
Fan		
Belts	Direct Drive	
Centerline Dist.		
	Design	Actual
Fan RPM		Fan Speed 75%

Notes:

Outlet Test Sheet

Project:	Shake Shack North Brunswick Township		
System:	KEF-1	**Location:**	Kitchen
Instrument:	Shortridge 8403	**Date:**	11/21/23

Area Served	**Outlet**					**Design**		**Final**		**Notes**
	Drwg	**No.**	**Type**	**Size**	**Ak**	**FPM**	**CFM**	**FPM**	**CFM**	
Hood 1	M-101		Hood	(2) 16x20	4.15	169	700	167	693	
Notes:										

Fan Test Sheet

Project:	Shake Shack North Brunswick Township	**System:**	KEF-2
Location:	Roof	**Serves:**	Hood 2
Instrument:	Shortridge ADM-860c	**Date:**	11/21/23

Fan Data	
Make:	CaptiveAire
Model:	DU50HFA
Serial No.:	6027062

Air Flow Data		
	Design	Actual
Total	700	702

Static Pressure		
Total Design:	1.00	in.w.c.
Suction:	Curb	in.w.c.
Discharge:	0.14	in.w.c.
Total Actual:		in.w.c.

Motor Data			
HP:	0.5	RPM:	1800
Phase:	1	SF:	1.15
	Rated		Actual
Volts:	208		211
Amps:	3.80		1.90
Hz:	60		60

Drive Data		
	Size	Bore
Motor		
Fan		
Belts	Direct Drive	
Centerline Dist.		
	Design	Actual
Fan RPM		Fan Speed 65%

Notes:

Outlet Test Sheet

Project:	Shake Shack North Brunswick Township		
System:	KEF-2	**Location:**	Kitchen
Instrument:	Shortridge 8403	**Date:**	11/21/23

Area Served	Outlet					Design		Final		Notes
	Drwg	No.	Type	Size	Ak	FPM	CFM	FPM	CFM	
Hood 2	M-101		Hood	(2) 16x20	4.15	169	700	169	702	
Notes:										

Fan Test Sheet

Project:	Shake Shack North Brunswick Township	**System:**	KEF-3
Location:	Roof	**Serves:**	Hood 3
Instrument:	Shortridge ADM-860c	**Date:**	11/21/23

Fan Data	
Make:	INTERTEK
Model:	DU50HFA
Serial No.:	6027062

Air Flow Data		
	Design	Actual
Total	700	681

Static Pressure		
Total Design:	1.00	in.w.c.
Suction:	Curb	in.w.c.
Discharge:	0.06	in.w.c.
Total Actual:		in.w.c.

Motor Data			
HP:	0.5	RPM:	2000
Phase:	1	SF:	1.15
	Rated		Actual
Volts:	208		210
Amps:	3.80		2.10
Hz:	60		60

Drive Data		
	Size	Bore
Motor		
Fan		
Belts	Direct Drive	
Centerline Dist.		
	Design	Actual
Fan RPM		Fan Speed 71%

Notes:

Outlet Test Sheet

Project:	Shake Shack North Brunswick Township		
System:	KEF-3	**Location:**	Kitchen
Instrument:	Shortridge 8403	**Date:**	11/21/23

Area Served	Outlet					Design		Final		Notes
	Drwg	No.	Type	Size	Ak	FPM	CFM	FPM	CFM	
Hood 3	M-101		Hood	(2) 16x20	4.15	169	700	164	681	
Notes:										

Fan Test Sheet

Project:	Shake Shack North Brunswick Township	**System:**	KEF-4
Location:	Roof	**Serves:**	Hood 4
Instrument:	Shortridge ADM-860c	**Date:**	11/21/23

Fan Data	
Make:	INTERTEK
Model:	DU50HFA
Serial No.:	6027062

Air Flow Data		
	Design	Actual
Total	700	681

Static Pressure		
Total Design:	1.00	in.w.c.
Suction:	Curb	in.w.c.
Discharge:	0.04	in.w.c.
Total Actual:		in.w.c.

Motor Data			
HP:	0.5	RPM:	2000
Phase:	1	SF:	1.15
	Rated		Actual
Volts:	208		210
Amps:	3.80		2.20
Hz:	60		60

Drive Data		
	Size	Bore
Motor		
Fan		
Belts	Direct Drive	
Centerline Dist.		
	Design	Actual
Fan RPM		Fan Speed 67%

Notes:

Outlet Test Sheet

Project:	Shake Shack North Brunswick Township		
System:	KEF-4	**Location:**	Kitchen
Instrument:	Shortridge ADM-860c	**Date:**	11/21/23

Area Served	Outlet					Design		Final		Notes
	Drwg	No.	Type	Size	Ak	FPM	CFM	FPM	CFM	
Hood 4	M-101		Hood	(2) 16x20	4.15	169	700	164	681	
Notes:										

Fan Test Sheet

Project:	Shake Shack North Brunswick Township	**System:**	TX-1
Location:	Roof	**Serves:**	Toillet
Instrument:	Shortridge ADM-860c	**Date:**	11/21/23

Fan Data	
Make:	PennBarry
Model:	DX130GP
Serial No.:	A23AT10845

Air Flow Data		
	Design	Actual
Total	350	337

Static Pressure		
Total Design:	0.30	in.w.c.
Suction:	Curb	in.w.c.
Discharge:	Free	in.w.c.
Total Actual:		in.w.c.

Motor Data			
HP:	0.33	RPM:	1750
Phase:	1	SF:	1.15
	Rated		Actual
Volts:	115		122
Amps:	5.20		1.00
Hz:	60		60

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

Notes:

Outlet Test Sheet

Project:	Shake Shack North Brunswick Township		
System:	TX-1	**Location:**	Toilet
Instrument:	Alnor RVA801	**Date:**	11/21/23

Area Served	**Outlet**					**Design**		**Final**		**Notes**
	Drwg	**No.**	**Type**	**Size**	**Ak**	**FPM**	**CFM**	**FPM**	**CFM**	
Toilet	M-101	1	CR	12x12	0.84	60	50	59	50	
Toilet	M-101	2	CR	12x12	0.84	179	150	167	140	
Toilet	M-101	3	CR	12x12	0.84	179	150	175	147	
							350		337	
Notes:										

Fan Test Sheet

Project:	Shake Shack North Brunswick Township	**System:**	TX-2
Location:	Roof	**Serves:**	Toillet
Instrument:	Shortridge ADM-860c	**Date:**	11/21/23

Fan Data	
Make:	PennBarry
Model:	DX130GP
Serial No.:	A23AT10845

Air Flow Data		
	Design	Actual
Total	125	130

Static Pressure		
Total Design:	0.30	in.w.c.
Suction:	Curb	in.w.c.
Discharge:	Free	in.w.c.
Total Actual:		in.w.c.

Motor Data			
HP:	0.33	RPM:	1750
Phase:	1	SF:	1.15
	Rated		Actual
Volts:	115		122
Amps:	5.20		3.20
Hz:	60		60

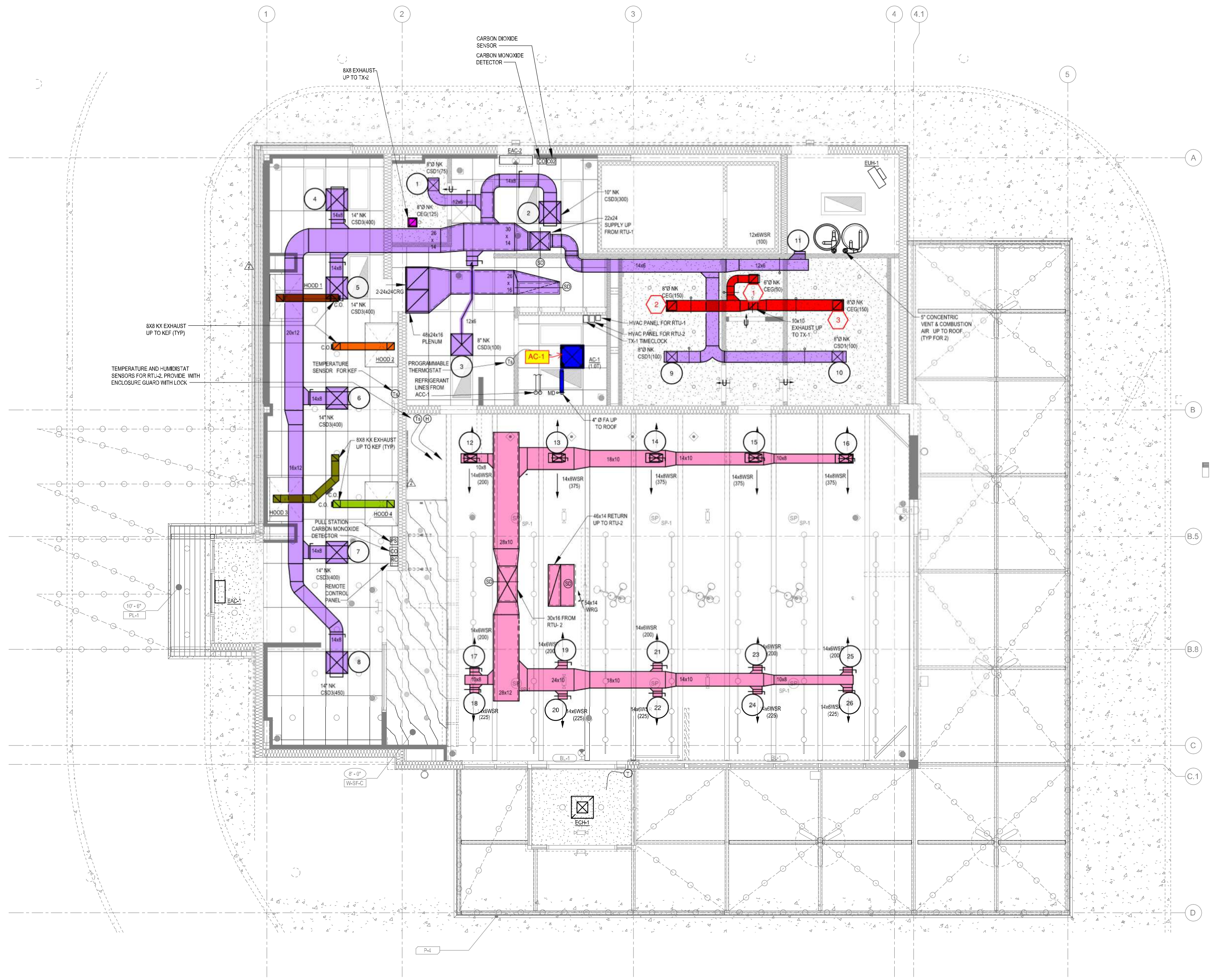
Drive Data		
	Size	Bore
Motor		
Fan		
Belts	Direct Drive	
Centerline Dist.		
	Design	Actual
Fan RPM		

Notes:

Outlet Test Sheet

Project:	Shake Shack North Brunswick Township		
System:	TX-2	**Location:**	Toilet
Instrument:	Alnor RVA801	**Date:**	11/21/23

Area Served	**Outlet**					**Design**		**Final**		**Notes**
	Drwg	**No.**	**Type**	**Size**	**Ak**	**FPM**	**CFM**	**FPM**	**CFM**	
Toilet	M-101		CR	12x12	0.84	149	125	155	130	
Notes:										



DRAWIN

1. PF DE FC
2. PF
3. CC FL
4. PF RE
5. TI
6. A
7. A
8. AL FA FL DI
9. AL SF CC CE
10. VC FF DA IN
11. AL M M
13. AL RI
14. FC TC
15. FC
16. IN ±4 EL W
17. PF RE SE SY AL AL M AL LC HI
18. IN EX
19. AL OI CE AF