Report By:

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

Report: TAB Report

Function: Test, Adjust, & Balance

Date: 08/20/2025

Completed By: National TAB

PROJECT

08-18-25 WHATABURGER #1449 TUCSON, AZ

10048 E. OLD VAIL RD.

TUCSON, AZ 85747

Client

Whataburger Restaurants

300 Concord Plaza Dr

San Antonio, TX 78216

National TAB

Project: 08-18-25 WHATABURGER #1449 TUCSON, AZ

Table Of Contents

Project Summary
The summary below provides a quick understanding of our scope of work and general testing procedures. Enclosed in the report are further details 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.

Exhaust Fans w/ Registers
The exhaust fan was measured at the grilles to measure the total flow. The fan was then adjusted to bring airflow within tolerance of the engineer's design flow. Each grille was then adjusted to within tolerance of design flow.

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.
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

- COMPRESSORS NOT OPERATIONAL
- DIFFUSER TYPE MISMATCH
- DIRTY FINAL FILTERS
- NO SPEED CTRL ON EF1

08-18-25 WHATABURGER #1449 TUCSON, AZ

Project Issue Information

Issue Name :	COMPRESSORS NOT OPERATIONAL		
Description :	Unit running but not cooling. Tried jumping units into cooling but it would not run. The unit needs to be serviced.		
Created By :	National TAB	**Assigned To :**	National TAB - Dan Hertenstein
Status :	Open		
Priority :	Medium	**Asset Tag :**	RTU1
Originated Date :	08/20/2025 - Christine Weale - National TAB		

08-18-25 WHATABURGER #1449 TUCSON, AZ

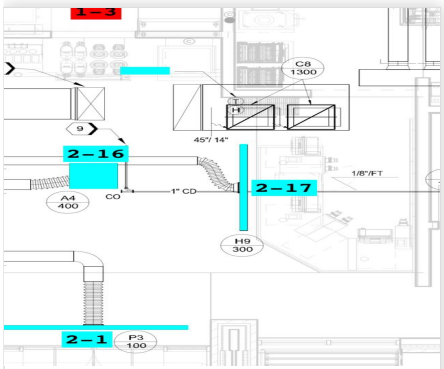
Project Issue Information

Issue Name : DIFFUSER TYPE MISMATCH

Description : Diffuser is shown as a linear type in design, but installed as a square diffuser.

Created By :	National TAB	**Assigned To :**	National TAB - Dan Hertenstein
Status :	Open		
Priority :	InfoOnly	**Asset Tag :**	SGRD17
Originated Date :	08/20/2025 - Christine Weale - National TAB		

Project Issue File Details



08/20/2025

08-18-25 WHATABURGER #1449 TUCSON, AZ

Project Issue Information

Issue Name : DIRTY FINAL FILTERS

Description : RTU-1 and RTU-2 final filters are dirty. Recommend replacement.

Created By :	National TAB	**Assigned To :**	National TAB - Dan Hertenstein
Status :	Open		
Priority :	Low	**Asset Tag :**	RTU1
Originated Date :	08/20/2025 - Christine Weale - National TAB		

Project Issue File Details

08/20/2025

08-18-25 WHATABURGER #1449 TUCSON, AZ

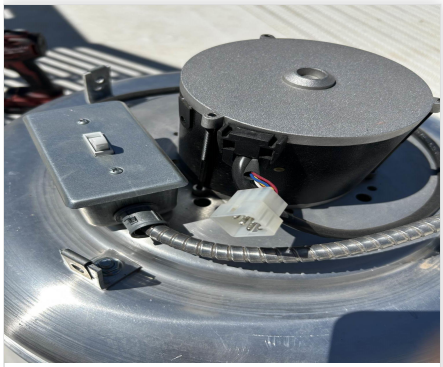
Project Issue Information

Issue Name : NO SPEED CTRL ON EF1

Description : There is no way to decrease the speed for the EF1 exhaust fan. Recommend adding a speed controller. Airflow is high as a result.

Created By :	National TAB	**Assigned To :**	National TAB - Dan Hertenstein
Status :	Open		
Priority :	Low	**Asset Tag :**	EF1
Originated Date :	08/20/2025 - Christine Weale - National TAB		

Project Issue File Details



08/20/2025

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	3850	3946	1390	1593	2460	2353	63.9%	59.6%						
RTU-2	DINING	2050	2038	500	556	1550	1482	75.6%	72.7%						
KEF-1	KITCHE HD											2110	2134		
KEF-2	KITCHEN HD											1215	1250		
EF-1	RESTROOMS													300	436
TOTALS		5900	5984	1890	2149	4010	3835			0	0	3325	3384	300	436

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	4010	3835
TOTAL EXHAUST	3625	3820
NET AIRFLOW	385	15

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H20)
FRONT	0.019
SIDE	0.017
REAR	0.021
AVERAGE	**0.019**

FINAL CHECKS

ACTUAL NET AIRFLOW COINCIDES WITH DESIGN: ✓

MEASURED PRESSURES COINCIDES WITH ACTUAL NET AIRFLOW: ✓

NOTES:

CheckList List

- 01: RTU's
- 02: EF's
- 03: Hoods
- 04: Final Checks

08-18-25 WHATABURGER #1449 TUCSON, AZ

CheckList Information

Name :	01: RTU's	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	08/18/2025 - Natasha Louw - National TAB		
Completed Date :	08/20/2025 - Christine Weale - National TAB		

CheckList Item Details

RTU's/AHU's

Thermostats installed and have power?	Pass
Comment:	
All diffusers and grilles are installed and match design?	Fail
Comment:	
Diffuser 2-17 does not match design.	
Motors are all operating below the FLA rating?	Pass
Comment:	
Is gas piping installed and valves turned on?	Pass
Comment:	
Unit free of noticeable noise and vibration	Pass
Comment:	
Final outside air damper position is set manually and marked with permanent marker?	Pass
Comment:	

Supply airflow is 0 to +10%?	Pass
Comment:	
Outside airflow is 0 to +10%?	Pass
Comment:	
Return balance dampers are confirmed to be 100% open (if installed)?	Pass
Comment:	
Screenshot of the GRD marked up with supply and return traverse locations for RTU-1 (Add picture here)	N/A
Comment:	
Screenshot of the GRD marked up with supply and return traverse locations for RTU-2 (Add picture here)	N/A
Comment:	
For each unit supply, is the flow hood reading within 10% of the final traverse reading? If not do you feel any major points of leakage	Pass
Comment:	
For each unit return, is the flow hood reading within 10% of the final traverse reading? If not do you feel any major points of leakage	Pass
Comment:	

08-18-25 WHATABURGER #1449 TUCSON, AZ

CheckList Information

Name :	02: EF's	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	08/18/2025 - Natasha Louw - National TAB		
Completed Date :	08/19/2025 - David Nicolas Sanchez - National TAB		

CheckList Item Details

EF's

Rotation is correct?	Pass
Comment:	
Belts are tight?	N/A
Comment:	
Hinge kit installed installed on hood fan?	Pass
Comment:	
Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?	Pass
Comment:	
Flex conduit is long enough so that fan can be completely tilted back?	Pass
Comment:	
There is no major leakage around base of fan?	Pass
Comment:	

Is the motor operating below the motor FLA rating?	Pass
Comment:	
For restroom fan(s) is the back draft damper installed and can it fully open?	Pass
Comment:	
Unit free of noticeable noise and vibration?	Pass
Comment:	
Exhaust airflow is 0 to +10%?	Pass
Comment:	

08-18-25 WHATABURGER #1449 TUCSON, AZ

CheckList Information

Name :	03: Hoods	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	08/18/2025 - Natasha Louw - National TAB		
Completed Date :	08/19/2025 - David Nicolas Sanchez - National TAB		

CheckList Item Details

HOODS

All hood filters installed and accounted for?	Pass
Comment:	
Hoods are wired and have power?	Pass
Comment:	
Hood is free of alarms?	N/A
Comment:	
Hood is free of damage?	Pass
Comment:	
Quarter or full vertical end panels are installed if specified?	Pass
Comment:	

08-18-25 WHATABURGER #1449 TUCSON, AZ

CheckList Information

Name :	04: Final Checks	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	08/18/2025 - Natasha Louw - National TAB		
Completed Date :	08/20/2025 - Christine Weale - National TAB		

CheckList Item Details

FINAL CHECKS

Is space free of drafting?	Pass
Comment:	
Is space comfortable in all areas?	Fail
Comment: RTU-1 not cooling.	
Is the space free of ventilation noise?	Pass
Comment:	

List kitchen equipment turned on for testing

Comment: None

List smoke candle type used

Comment: CE0163 45 seconds

HOOD CAPTURE TEST

Smoke test capture % - Perimeter of hood

Comment:

100%

Smoke test capture % - Top of cooking surface

Comment:

100%

WITNESS

Date test was completed	08/20/2025

Comment:

TAB tech name / Firm

Comment:

National TAB Intelligence David Sanchez Vaughn Paape Christine Weale

Site super name / Firm

Comment:

Andy Patt

Owner representative name / Firm (if Applicable)

Comment:

BUILDING PRESSURE

Do actual net building airflow, design net building airflow, and pressure coincide? If not why? (All three should either be positive or negative)	Pass

Comment:

Front: 0.019 Side: 0.017 Rear: 0.021

Is the building pressure at least +0.02"? If not, do you see any obvious areas of external building that aren't sealed?	Fail

Comment:

Almost. No seal issues.

National TAB

Project: 08-18-25 WHATABURGER #1449 TUCSON, AZ

System/Unit: AHU/RTU

Asset: RTU1 AREA:KITCHEN

Unit Data		
	Design	**Actual**
MFG	AAON	AAON
Serial Num	-	202506-BNGP123067
Model Num	RN-020-8-0-GB04-349	RNA-020-C-A-8-FAB04-CD1K0
Num OA Filters 1	-	3
OA Filter Size 1	-	19.5X25.75
Num Final Filter 1	-	6
Final Filter Size 1	-	20X25X2

Motor Data		
	Design	**Actual**
Motor MFG	-	NL
Frame	-	NL
Horsepower	3.00	3.00
Motor Rpm	-	1170
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	11.6

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	3850	3946
SF RPM	928	900
MOTOR RPM	-	900
RA CFM	1390	1593
OA CFM	2460	2353
RL Voltage	-	196/196/196
RL Amperage	-	5.86@VFD
SF System SetPt	-	50HZ
RA Damper Position	-	1”
Min OA Damper Position	-	2.0”
Min OA Damper Type	-	MANUAL

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.24”
Fan Suction SP	-	-0.53”
Fan Discharge SP	-	0.42”
Total ESP	0.75"	0.66”
Fan Total SP	-	0.95”

General	
	Actual
Unit free of Damage	YES
Fan Rotation Correct	YES
Unit Filters Clean	NO
Condensate Drain Installed	YES

Completed By: David Nicolas Sanchez on 08/20/2025

Unit Data - PHOTO LOG

08/26/2025

National TAB

Project:08-18-25 WHATABURGER #1449 TUCSON, AZ

AHU/RTU

Diffuser Supply (GRD)

RTU1/KITCHEN

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
SGRD1	RESTROOM	B3	6"	80	1	101	80	81	101.3
SGRD2	RESTROOM	B3	6"	64	1	109	65	60	93.8
SGRD3	KITCHEN	A6		320	1	233	236	339	105.9
SGRD4	KITCHEN	H10	12"	256	1	287	261	261	102.0
SGRD5	KITCHEN	A6		368	1	348	322	349	94.8
SGRD6	KITCHEN	A6		368	1	350	328	390	106.0
SGRD7	KITCHEN	A6		368	1	383	350	381	103.5
SGRD8	KITCHEN	A6		368	1	589	535	388	105.4
SGRD9	KITCHEN	A6		368	1	403	363	384	104.3
SGRD10	KITCHEN	A4		192	1	325	288	205	106.8
SGRD11	OFFICE	A4		128	1	271	249	130	101.6
SGRD12	FOH	A6		320	1	340	303	334	104.4
SGRD13	DOORWAY	H10	12"	320	1	363	317	342	106.9
SGRD14	FOH	A6		320	1	290	262	302	94.4
Total				3840		4392	3959	3946	102.76%

National TAB

Project: 08-18-25 WHATABURGER #1449 TUCSON, AZ

System/Unit: AHU/RTU

Asset: RTU2 AREA:DINING

Unit Data		
	Design	**Actual**
MFG	AAON	AAON
Serial Num	-	202506-ANGK123034
Model Num	RN-013-8-0-GB04-3F9	RN-013-8-0-GB04-3F9
Num OA Filters 1	-	2
OA Filter Size 1	-	24.68X19.75
Num Final Filter 1	-	4
Final Filter Size 1	-	20X25X2

Motor Data		
	Design	**Actual**
Motor MFG	-	NL
Frame	-	NL
Horsepower	2.00	2.00
Motor Rpm	-	1170
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	7.5

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	2050	2038
SF RPM	1184	756
MOTOR RPM	-	756
RA CFM	500	556
OA CFM	1550	1482
RL Voltage	-	207/205/205
RL Amperage	-	2.6@VFD
SF System SetPt	-	42HZ
RA Damper Position	-	0.25"
Min OA Damper Position	-	3.5"
Min OA Damper Type	-	MANUAL

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.08"
Fan Suction SP	-	-0.27"
Fan Discharge SP	-	0.11"
Total ESP	0.50"	0.19"
Fan Total SP	-	0.38"

General	
	Actual
Unit free of Damage	YES
Fan Rotation Correct	YES
Unit Filters Clean	No
Condensate Drain Installed	YES

Completed By: Christine Weale on 08/20/2025

Unit Data - PHOTO LOG

08/27/2025

National TAB

Project:08-18-25 WHATABURGER #1449 TUCSON, AZ

AHU/RTU

Diffuser Supply (GRD)

RTU2/DINING

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	ENTRANCE	P3	8"	52	1	185	114	50	96.2
SGRD2	DINING	H9	8"	91	1	224	104	98	107.7
SGRD3	DINING	H9	8"	91	1	199	135	91	100.0
SGRD4	DINING	H9	8"	91	1	252	177	97	106.6
SGRD5	DINING	H9	8"	91	1	216	155	93	102.2
SGRD6	DINING	H9	8"	91	1	206	200	97	106.6
SGRD7	DINING	H9	8"	91	1	178	124	94	103.3
SGRD8	DINING	H9	8"	91	1	177	163	95	104.4
SGRD9	DINING	P3	8"	91	1	193	173	96	105.5
SGRD10	DINING	P3	8"	91	1	219	148	94	103.3
SGRD11	DINING	P3	8"	91	1	213	159	100	109.9
SGRD12	DINING			91	1	300	152	92	101.1
SGRD13	DINING			208	1	211	144	207	99.5
SGRD14	DINING			208	1	310	225	209	100.5
SGRD15	ORDERING			208	1	243	167	191	91.8
SGRD16	ORDERING		8"	208	1	245	172	189	90.9
SGRD17				156	1	150	118	145	92.9
Total				2041		3721	2630	2038	99.85%

National TAB

Project: 08-18-25 WHATABURGER #1449 TUCSON, AZ

System/Unit: FAN - Exhaust

Asset: EF1 AREA:RESTROOMS

Unit Data		
	Design	**Actual**
MFG	GREENHECK	GREENHECK
Model Num	G-080-VG	90C17DEC90ACEH
Serial Num	-	347PL64236-01/0000701
Type	DOWNBLAST	DOWNBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	COOK
Frame	-	NL
Horsepower	0.10	0.167
Motor Rpm	-	1725
Phase	1	1
Voltage (rated)	120	115
Amperage (rated)	-	2.36
Service Factor	-	NL

Test Data		
	Design	**Actual**
CFM	300	436
Fan RPM	1680	DD
Fan Rotation	-	CCW
Motor RPM	-	DD
System SetPt	-	SINGLE SPEED
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	0.50"	0.22”
Fan Inlet SP	-	-0.22”
Fan Discharge SP	-	ATMS

Completed By: Christine Weale on 08/20/2025

Unit Data - PHOTO LOG

08/27/2025

National TAB

Project:08-18-25 WHATABURGER #1449 TUCSON, AZ

FAN - Exhaust

Diffuser Ret/Exh (GRD)

EF1/RESTROOMS

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
EGRD1	RESTROOM	F1	6X6	150	1	226	226	226	150.7
EGRD2	RESTROOM	F1	6X6	150	1	210	210	210	140.0
Total				300		436	436	436	145.33%

National TAB

Project: 08-18-25 WHATABURGER #1449 TUCSON, AZ

System/Unit: FAN - Exhaust

Asset: KEF1 AREA:KITCHEN HD

Unit Data		
	Design	**Actual**
MFG	GREENHECK	COOK
Model Num	CUE-140-VG	164VH16DEC165CRH
Serial Num	-	3475L64236-00/000070
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	NIDEC
Frame	-	48Y
Horsepower	0.75	1
Motor Rpm	-	1725
Phase	1	1
Voltage (rated)	208	115/208
Amperage (rated)	-	11.6/7.3
Service Factor	-	NL

Test Data		
	Design	**Actual**
CFM	2110	2134
Fan RPM	1517	1372
Fan Rotation	-	CCW
Motor RPM	-	1372
System SetPt	-	81
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	1.00"	0.98”
Fan Inlet SP	-	-0.98”
Fan Discharge SP	-	ATMS

Completed By: David Nicolas Sanchez on 08/18/2025

Unit Data - PHOTO LOG

08/27/2025

National TAB

Project: 08-18-25 WHATABURGER #1449 TUCSON, AZ

System/Unit: FAN - Exhaust

Asset: KEF2 AREA:KITCHEN HD

Unit Data		
	Design	**Actual**
MFG	GREENHECK	COOK
Model Num	CUE-120-VG	120V17DEC120VCR
Serial Num	-	347SL64236-00/000230
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	NIDEC
Frame	-	48Y
Horsepower	0.50	0.50
Motor Rpm	-	1800
Phase	1	1
Voltage (rated)	208	115/208
Amperage (rated)	-	6.4/4.0
Service Factor	-	NA

Test Data		
	Design	**Actual**
CFM	1215	1250
Fan RPM	1415	1472
Fan Rotation	-	CCW
Motor RPM	-	1472
System SetPt	-	83
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	0.75"	0.40”
Fan Inlet SP	-	-0.40”
Fan Discharge SP	-	ATMS

Completed By: David Nicolas Sanchez on 08/18/2025

Unit Data - PHOTO LOG

08/27/2025

National TAB

Project: 08-18-25 WHATABURGER #1449 TUCSON, AZ

System/Unit: Kitchen Hood Type I

Asset: HD1 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	HK INTERNATIONAL
Model Num	NA	HKD027
Job / Serial Num	-	8163537-001
Type	-	TYPE I CANOPY
Hood length	-	84”
Hood Width	-	60”

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	BAFFLE
Filter Size 1	-	19. 75X11.5
Filter Qty 1	-	8
Filter AK factor size 1	-	1.55
Filter Total AK Area	-	12.4
Filter1 FPM	-	173
Filter2 FPM	-	185
Filter3 FPM	-	181
Filter4 FPM	-	155
Filter5 FPM	-	174
Filter6 FPM	-	181
Filter7 FPM	-	176
Filter8 FPM	-	158
Filter Ave FPM(corr)	-	172
CFM	2110	2134

Cooking Equipment	
	Actual
Item 1	GRIDDLE

Completed By: David Nicolas Sanchez on 08/18/2025

National TAB

Project: 08-18-25 WHATABURGER #1449 TUCSON, AZ

System/Unit: Kitchen Hood Type I

Asset: HD2 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	HK INTERNATIONAL
Model Num	NA	HKD022
Job / Serial Num	-	8162417-002
Type	-	TYPE I CANOPY
Hood length	-	73”
Hood Width	-	24”

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	BAFFLED
Filter Size 1	-	15.75X11.5
Filter Size 2	-	19.5X11.5
Filter Qty 1	-	3
Filter Qty 2	-	1
Filter AK factor size 1	-	1.25
Filters AK factor size 2	-	1.55
Filter Total AK Area	-	5.3
Filter1 FPM	-	241
Filter2 FPM	-	243
Filter3 FPM	-	244
Filter4 FPM	-	219
Filter Ave FPM(corr)	-	236
CFM	1215	1250

Cooking Equipment	
	Actual
Item 1	FRYER

Completed By: David Nicolas Sanchez on 08/18/2025