

Report By:

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

NATIONAL

TAB

Comfort. Under control.

**Report: TAB REPORT
Function: Test, Adjust, & Balance
Date: 01/16/2023**

PROJECT

01-09-23 FREDDY'S - CHESAPEAKE, VA

721 N Battlefield Blvd

CHESAPEAKE, VA 23320

Client

HCI Hospitality

520 McCall Road

Manhattan, KS 66502

National TAB

Project: 01-09-23 FREDDY'S - CHESAPEAKE, VA

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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.

DOAS w/ Diffusers

Each of the DOAS were measured at their terminal devices or via traverse to establish a total flow for that unit. Each DOAS 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.

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	5000	5020	4128	4190	872	830	17.4%	16.5%						
DOAS-1	KITCHEN	2375	2194	0	0	2375	2194	100.0%	100.0%						
KEF-1	HOOD 1											1600	1641		
KEF-2	HOOD 2											775	806		
EF-1	WOMENS RR													75	77
EF-2	MENS RR													150	206
TOTALS		7375	7214	4128	4190	3247	3024			0	0	2375	2447	225	283

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	3247	3024
TOTAL EXHAUST	2600	2730
NET AIRFLOW	647	294

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H2O)
FRONT	0.0023
SIDE	-
REAR	0.0026
AVERAGE	0.0025

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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CheckList Information

Name : TECH - SITE PICTURES **Status :** NotSubmitted
Assigned Organization : National TAB **Asset :**
Requesting Organization : National TAB

CheckList Item Details

STORE FRONT



Storefront.jpeg

RTU-1



RTU-1.jpeg

DOAS-1



DOAS-1.jpeg

KEF-1



KEF-1.jpeg

KEF-2



KEF-2.jpeg

EF-1



EF-1.jpeg

EF-2



EF-2.jpeg

HOOD-1



Hood1.jpeg

HOD-2



Hood-2.jpeg

Notes/Comments :



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CheckList Information

Name : TECH - STEP 1: INITIAL WALKTHROUGH **Status :** NotSubmitted
Assigned Organization : National TAB **Asset :**
Requesting Organization : National TAB

CheckList Item Details

INITIAL SITE WALKTHROUGH

All diffusers and grilles are installed and match design?	Yes
All hood filters installed and accounted for?	Yes
Hoods are wired and have power?	Yes
Hood is free of alarms?	Yes
Thermostats have power?	Yes
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	Yes

Notes/Comments :



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CheckList Information

Name : TECH - STEP 2: UNIT DATA AND EVAL **Status :** NotSubmitted

Assigned Organization : National TAB **Asset :**

Requesting Organization : National TAB

CheckList Item Details

UNIT DATA AND EVALUATION WHILE GATHERING UNIT DATA CHECK THE FOLLOWING:

RTU's/AHU's

Economizers are assembled and functional?	Yes
DCV Max damper opening position is set to minimum?	Yes
Free cooling enthalpy set point set for lowest setting (Typically "D")	Yes, Trane unit was set to "E".
Motors are all operating below the FLA rating?	Yes
Are belts tight?	Yes
If direct drive unit is the speed controller working.	DOAS frequency change was no in the HMI options.
Is gas piping installed and valves turned on?	Yes
Unit free of noticeable noise and vibration	Yes

EF's

Rotation is correct?	Yes
Belts are tight?	NA
Grease cup installed on hood fan?	Yes
Hinge kit installed installed on hood fan?	Yes
Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?	Yes

Flex conduit is long enough so that fan can be completely tilted back?	Yes
There is no major leakage around base of fan?	No major leakage
Is the motor operating below the motor FLA rating?	Yes
For restroom fan(s) is the back draft damper installed and can it fully open?	NA
Unit free of noticeable noise and vibration?	Yes

MUA

Rotation is correct?	NA
Gas piping is installed and valves are in on position?	NA
Heater tested and is functional?	NA
Internal motorized damper is fully opening?	NA
Motor is operating below the FLA rating?	NA
Unit free of noticeable noise and vibration?	NA

HOODS

Kitchen equipment installed in proper places?	Yes
Can kitchen equipment be turned on for final smoke test?	No
Griddle is completely centered underneath hood?	Yes

DOCUMENTATION

Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	Yes
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PICTURES TAKEN OF:

All Issues	Yes
Each Piece of equipment	Yes
Each Hood	Yes
Front of Store	Yes

<p>Notes/Comments :</p> <hr/> <hr/> <hr/>
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CheckList Information

Name : TECH - STEP 3: TEST, ADJUST AND BALANCE **Status :** NotSubmitted

Assigned Organization : National TAB **Asset :**

Requesting Organization : National TAB

CheckList Item Details

TEST, ADJUST, AND BALANCE ALL EQUIPMENT:

DURING TESTING MAKE NOTE OF THE FOLLOWING:

Is space free of drafting?	Yes
Is space comfortable in all areas?	Yes
Is the space free of ventilation noise?	Yes
If deviations from design were necessary to resolve 1-3 what were they? Otherwise put "NA".	The dampers to the restroom diffusers and hallway were inaccessible, so totals for the diffusers are out of design.

Notes/Comments :



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CheckList Information

Name : TECH - STEP 4: FINAL TESTS **Status :** NotSubmitted
Assigned Organization : National TAB **Asset :**
Requesting Organization : National TAB

CheckList Item Details

FINAL TESTS

HOOD CAPTURE TEST

List equipment turned on for testing	None
List smoke candle type used	S102 45 sec Emitter
Smoke test capture - Perimeter of hood	100%
Smoke test capture - Top of cooking surface	100%

WITNESS

Date test was completed	01/10/2023
TAB tech name / Firm	David Annan
Site super name / Firm	Shelby Wilson / Independence Construction Inc.
Owner representative name / Firm (if Applicable)	NA
Building pressure at front & back doors (All Systems On)	Front:0.0023" Rear: 0.0026"

ADDITIONAL

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

Thermostats Schedules: Program all thermostats to following settings:

All three thermostats have correct time/date? (if not set correctly)	Yes
Occupied Time: 8am-11:55pm	Yes
Occupied Fan ON	Yes
Occupied cooling 74	Yes
Occupied heating 68	Yes
Unoccupied Time 11:55pm-8am	Yes
Unoccupied Fan Auto	Yes
Unoccupied cooling 79	Yes
Unoccupied heating 63	Yes
Set a Partial Screen Lock for Thermostats (i.e., make sure temperature is adjustable but not schedule)	Yes
Password is set to 999 for Partial Screen Lock?	Yes

RTU Economizers

Note: These instructions are for Lennox units. There are similar settings for other OEMs. Call office for assistance if needed.

Enthalpy is set to "D" for all three units	Trane unit set to "E"
"DCV Set" dials turned all the way to the left (counter clockwise)	Yes
"DCV Max" dials turned all the way to the left (counter clockwise)	Yes

Notes/Comments :

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Project: 01-09-23 FREDDY'S - CHESAPEAKE, VA

System/Unit: AHU/RTU



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Asset: DOAS1

AREA:KITCHEN

Unit Data		
	Design	Actual
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Serial Num	-	5019898
Model Num	CASRTU3-I.250-18-20T-DOAS	CASRTU3-I.250-18-20T-DOAS
Type	DOAS	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	-	Westinghouse
Frame	-	145T
Horsepower	2	2
Motor Rpm	-	1740
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	6.06

Drive Data		
	Design	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	2375	2194
SF RPM	-	3
RA CFM	0	0
OA CFM	2375	2194
RL Voltage	-	209/209/210
RL Amperage	-	4.2 "VFD"
SF Rotation	-	CW
RA Damper Position	-	0%
Min OA Damper Position	-	100%
Min OA Damper Type	-	OBD

Performance Data		
	Design	Actual
Fan Discharge SP	-	0.2065"
Total ESP	0.500"	0.2065"

General		
	Design	Actual
Fan Rotation Correct	-	Yes
Unit Filters Clean	-	Yes
Condensate Drain Installed	-	Yes

Completed By: David Annan

Notes:

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Project:01-09-23 FREDDY'S - CHESAPEAKE, VA
AHU/RTU



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Diffuser Supply (GRD)

DOAS1/KITCHEN

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	CUSTOMER SERVICE	SD3	10"	220	1	198	205	205	93.2
SGRD2	CUSTOMER SERVICE	SD2	10"	220	1	202	207	207	94.1
SGRD3	KITCHEN	SD3	10"	220	1	192	201	201	91.4
SGRD4	DRIVE THRU	SD3	10"	220	1	198	210	210	95.5
SGRD5	KITCHEN	SD3	10"	220	1	197	206	206	93.6
SGRD6	KITCHEN	SD3	10"	220	1	206	216	216	98.2
SGRD7	KITCHEN	SD3	10"	220	1	189	202	202	91.8
SGRD8	KITCHEN	SD3	10"	220	1	177	200	200	90.9
SGRD9	KITCHEN	SD3	10"	220	1	64	203	203	92.3
SGRD10	KITCHEN	SD2	10"	220	1	83	141	141	64.1
SGRD11	OFFICE	SD4	8"	155	1	173	203	203	131.0

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Asset	Notes
SGRD11	DAMPER NOT ACCESSIBLE. RECOMMEND INSTALLING OBD TO REDUCE FLOW.

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Project: 01-09-23 FREDDY'S - CHESAPEAKE, VA

System/Unit: AHU/RTU



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Asset: RTU1

AREA: DINING

Unit Data		
	Design	Actual
MFG	TRANE	TRANE
Serial Num	-	221010789D
Model Num	YHD150G3R	YHD150G3R
Type	RTU	RTU
Configuration	VERTICAL	Vertical
Num OA Filters 1	-	1
OA Filter Size 1	-	58X17
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2
Num Final Filter 2	-	4
Final Filter Size 2	-	20X25X2

Test Data		
	Design	Actual
SF CFM	5000	5020
SF RPM	-	682
RA CFM	4128	4190
OA CFM	872	830
RL Voltage	-	209/208/210
RL Amperage	-	7.5/7.3/6.8
SF Rotation	-	CW
RA Damper Position	-	Marked
Min OA Damper Position	-	Marked
Min OA Damper Type	-	SBD
OA Enthalpy Setpt	-	"E"

Motor Data		
	Design	Actual
Motor MFG	-	Marathon
Frame	-	56HZ
Horsepower	3	3
Motor Rpm	-	1725
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	9.4

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.2018"
Fan Suction SP	-	-0.4313"
Fan Discharge SP	-	0.3487"
Total ESP	1.0"	0.5505"
Fan Total SP	-	0.78"

Drive Data		
	Design	Actual
Motor Sheave Size	-	3 7/8"
Motor Bore Size	-	7/8"
Motor Sheave SetPt	-	1.5 Turns out
Fan Sheave Size	-	10 5/8"
Fan Sheave Bore	-	1 1/8"
Belt CL Distance	-	21 1/2"
Num of Belts	-	1
Belt Size	-	BX68
Belt Alignment	-	Good

General		
	Design	Actual
Fan Rotation Correct	-	Yes
Unit Filters Clean	-	Yes
Condensate Drain Installed	-	Yes

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Notes:

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Project:01-09-23 FREDDY'S - CHESAPEAKE, VA

AHU/RTU



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Diffuser Supply (GRD)

RTU1/DINING

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	DINING	SD1	12"	500	1.22	170	475	475	95.0
SGRD2	DINING	SD1	12"	475	1.22	525	468	468	98.5
SGRD3	DINING	SD1	12"	500	1.22	500	517	517	103.4
SGRD4	DINING	SD1	12"	475	1.22	506	430	430	90.5
SGRD5	DINING	SD1	12"	475	1.22	617	443	443	93.3
SGRD6	DINING	SD1	12"	475	1.22	338	429	429	90.3
SGRD7	DINING	SD1	12"	475	1.22	273	470	470	98.9
SGRD8	DINING	SD1	12"	475	1.22	401	476	476	100.2
SGRD9	DINING	SD1	12"	475	1.22	429	473	473	99.6
SGRD10	DINING	SD1	12"	475	1.22	479	436	436	91.8
SGRD11	RR VESTIBUL E	SD5	6"	50	1	126	130	130	260.0
SGRD12	WOMENS RR	SD5	6"	50	1	184	122	122	244.0
SGRD13	MENS RR	SD5	6"	100	1	162	151	151	151.0

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Project: 01-09-23 FREDDY'S - CHESAPEAKE, VA

System/Unit: FAN - Exhaust



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Asset: EF1

AREA:WOMEN RR

Unit Data		
	Design	Actual
MFG	COOK	COOK
Model Num	GC-146	GC-146
Serial Num	-	NA
Type	CEILING	Ceiling
Configuration	VERTICAL	Vertical

Motor Data		
	Design	Actual
Horsepower	30.3W	NA
Phase	1	1
Voltage (rated)	120	120

Test Data		
	Design	Actual
CFM	75	77
Fan RPM	900	NA
Fan Rotation	-	CCW
System SetPt	-	Low speed
RL Voltage	-	122.2
RL Amperage	-	1.2
Total ESP	0.25"	NA

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Notes: Unable to see motor information.

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Project: 01-09-23 FREDDY'S - CHESAPEAKE, VA

System/Unit: FAN - Exhaust



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Asset: EF2

AREA:MENS RR

Unit Data

	Design	Actual
MFG	COOK	COOK
Model Num	GC-168	GC-168
Serial Num	-	NA
Type	CEILING	Ceiling
Configuration	VERTICAL	Vertical

Motor Data

	Design	Actual
Horsepower	50.4W	NA
Phase	1	1
Voltage (rated)	120	120

Test Data

	Design	Actual
CFM	150	206
Fan RPM	1099	NA
Fan Rotation	-	CCW
Motor RPM	-	NA
System SetPt	-	High Speed
RL Voltage	-	122.6
RL Amperage	-	1.2
Total ESP	0.25"	NA

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Notes:

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Project: 01-09-23 FREDDY'S - CHESAPEAKE, VA

System/Unit: FAN - Exhaust



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Asset: KEF1

AREA:HOOD 1

Unit Data		
	Design	Actual
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	CASRE18DD	CASRE18DD
Serial Num	-	5019898
Type	UTILITY	Utility Upblast
Configuration	VERTICAL	Vertical

Motor Data		
	Design	Actual
Motor MFG	-	Westinghouse
Frame	-	145T
Horsepower	1	1
Motor Rpm	-	1150
Phase	3	3
Voltage (rated)	208	208
Amperage (rated)	-	3.80
Service Factor	-	1.0

Test Data		
	Design	Actual
CFM	1600	1641
Fan RPM	1105	1106
Fan Rotation	-	CCW
Motor RPM	-	1106
System SetPt	-	51.7
RL Voltage	-	155.4/155.7/155.5
RL Amperage	-	3.2 "VFD"
Total ESP	1.4"	0.7737"
Fan Inlet SP	-	-0.7737"
Fan Discharge SP	-	ATM

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Project: 01-09-23 FREDDY'S - CHESAPEAKE, VA

System/Unit: FAN - Exhaust



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Asset: KEF2

AREA:HOOD 2

Unit Data		
	Design	Actual
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	DU50HFA	DU50HFA
Serial Num	-	5019898
Type	UPBLAST	Upblast
Configuration	VERTICAL	Vertical

Motor Data		
	Design	Actual
Motor MFG	-	Telco
Frame	-	N/L
Horsepower	0.500	1/2
Motor Rpm	-	1800
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	6.3
Service Factor	-	N/L

Test Data		
	Design	Actual
CFM	775	806
Fan RPM	1532	900
Fan Rotation	-	CCW
Motor RPM	-	900
System SetPt	-	50%
RL Voltage	-	122.3
RL Amperage	-	3.0 "VFD"
Total ESP	1.250"	0.4398"
Fan Inlet SP	-	-0.4398"
Fan Discharge SP	-	ATM

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Project: 01-09-23 FREDDY'S - CHESAPEAKE, VA

System/Unit: Kitchen Hood Type I



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Asset: HD1

AREA:

Unit Data		
	Design	Actual
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	5424 ND-2	5424 ND-2
Job / Serial Num	-	5019898
Type	TYPE I CANOPY	Type I High Proximity
Hood length	96	96"
Hood Width	54	54"

Test Data Exhaust		
	Design	Actual
Filter Type	CAPTRATE SOLO	Captrate Solo
Filter Size 1	16X16	16X16
Filter Qty 1	5	5
Filter AK factor size 1	1.62	1.62
Filter Total AK Area	8.1	8.1
Filter1 FPM	-	203.1
Filter2 FPM	-	201
Filter3 FPM	-	209.8
Filter4 FPM	-	204
Filter5 FPM	-	194.9
Filter Ave FPM(corr)	-	202.56
CFM	1600	1641

Cooking Equipment		
	Design	Actual
Item 1	-	Grill

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Project: 01-09-23 FREDDY'S - CHESAPEAKE, VA

System/Unit: Kitchen Hood Type I



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Asset: HD2

AREA:

Unit Data

	Design	Actual
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	5424 ND-2	5424 ND-2
Job / Serial Num	-	5019898
Type	TYPE I CANOPY	Type I High Proximity
Hood length	60	60"
Hood Width	54	54"

Test Data Exhaust

	Design	Actual
Filter Type	CAPTRATE SOLO	Captrate Solo
Filter Size 1	16X16	16X16
Filter Qty 1	3	3
Filter AK factor size 1	1.62	1.62
Filter Total AK Area	4.86	4.86
Filter1 FPM	-	166.2
Filter2 FPM	-	155.8
Filter3 FPM	-	175.3
Filter Ave FPM(corr)	-	165.77
CFM	775	806

Cooking Equipment

	Design	Actual
Item 1	-	Fryer

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