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.

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.

Comfort. Under control.

01-16-23 FREDDY'S - CLARKSVILLE, TN

CheckList Information

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

CheckList Item Details

STORE FRONT
RTU-1
DOAS-1
KEF-1
KEF-2
KEF-3
EF-1
EF-2
HOOD-1
HOOD-2
HOOD-3

Notes/Comments :

Comfort. Under control.

01-16-23 FREDDY'S - CLARKSVILLE, TN

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?	TESTING FIRE ON ARRIVE 1/16/23
Hood is free of alarms?	TESTING FIRE ON ARRIVAL 1/16/23
Thermostats have power?	YES
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	NA

Notes/Comments :

Comfort. Under control.

01-16-23 FREDDY'S - CLARKSVILLE, TN

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?	
DCV Max damper opening position is set to minimum?	
Free cooling enthalpy set point set for lowest setting (Typically "D")	
Motors are all operating below the FLA rating?	
Are belts tight?	
If direct drive unit is the speed controller working.	
Is gas piping installed and valves turned on?	
Unit free of noticeable noise and vibration	
EF's	
Rotation is correct?	
Belts are tight?	
Grease cup installed on hood fan?	
Hinge kit installed installed on hood fan?	
Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?	

Flex conduit is long enough so that fan can be completely tilted back?	
There is no major leakage around base of fan?	
Is the motor operating below the motor FLA rating?	
For restroom fan(s) is the back draft damper installed and can it fully open?	
Unit free of noticeable noise and vibration?	
MUA	
Rotation is correct?	
Gas piping is installed and valves are in on position?	
Heater tested and is functional?	
Internal motorized damper is fully opening?	
Motor is operating below the FLA rating?	
Unit free of noticeable noise and vibration?	
HOODS	
Kitchen equipment installed in proper places?	
Can kitchen equipment be turned on for final smoke test?	
Griddle is completely centered underneath hood?	
DOCUMENTATION	
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	
PICTURES TAKEN OF:	
All Issues	
Each Piece of equipment	
Each Hood	
Front of Store	

Notes/Comments :

Comfort. Under control.

01-16-23 FREDDY'S - CLARKSVILLE, TN

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?	
Is space comfortable in all areas?	
Is the space free of ventilation noise?	
If deviations from design were necessary to resolve 1-3 what were they? Otherwise put "NA".	

Notes/Comments :

Comfort. Under control.

01-16-23 FREDDY'S - CLARKSVILLE, TN

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	
List smoke candle type used	
Smoke test capture - Perimeter of hood	
Smoke test capture - Top of cooking surface	
WITNESS	
Date test was completed	
TAB tech name / Firm	
Site super name / Firm	
Owner representative name / Firm (if Applicable)	
Building pressure at front & back doors (All Systems On)	
ADDITIONAL	
Do actual net building airflow, design net building airflow, and pressure coincide? If not why? (All three should either be positive or negative)	
Thermostats are programmed?	
Thermostats Schdedules: Program all thermostats to following settings:	

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

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	
"DCV Set" dials turned all the way to the left (counter clockwise)	
"DCV Max" dials turned all the way to the left (counter clockwise)	

Notes/Comments :

Comfort. Under control.

01-16-23 FREDDY'S - CLARKSVILLE, TN

CheckList Information

Name :	TECH - STEP 5: FINAL DOCUMENTATION	**Status :**	NotSubmitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

FINAL DOCUMENTATION

Marked Data capture complete for all assets?	
Picture file sent to processing team or uploaded?	
Balance schedule complete and uploaded?	
Prelim report generated and reviewed?	

Notes/Comments :

National TAB

Project: 01-16-23 FREDDY'S - CLARKSVILLE, TN

System/Unit: AHU/RTU

Comfort. Under control.

Asset: DOAS1 AREA:KITCHEN

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Serial Num	-	4994659
Model Num	CASRTU3-I.300-18-20T-DOAS	CASRTU3-I.300-18-20T-DOAS
Type	DOAS	DOAS
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	4 METAL MESH
OA Filter Size 1	-	16X25X2
Num Final Filter 1	-	8
Final Filter Size 1	-	20X25X2

Motor Data		
	Design	**Actual**
Motor MFG	-	TECO WESTINGHOUSE
Frame	-	145T
Horsepower	2	2
Motor Rpm	-	1165
Phase	3	3
Rated Voltage	208	230/460
Rated Amperage	7.51/3.76	7.51/3.76

Drive Data		
	Design	**Actual**

Test Data		
	Design	**Actual**
SF CFM	2650	
SF RPM	-	
RA CFM	0	
OA CFM	2650	
RL Voltage	-	
RL Amperage	-	
SF Rotation	-	CCW
RA Damper Position	-	DOAS
Min OA Damper Position	-	DOAS
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	

Performance Data		
	Design	**Actual**
MA Plenum SP	-	
Fan Suction SP	-	
Fan Discharge SP	-	
Total ESP	0.5"	
Fan Total SP	-	

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

Completed By: Brianna Biggs

Notes:

National TAB

Project:01-16-23 FREDDY'S - CLARKSVILLE, TN

AHU/RTU

Comfort. Under control.

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	12"	250	1	199			-
SGRD2	CUSTOMER SERVICE	SD2	12"	250	1	172			-
SGRD3	DRIVE THRU	SD3	12"	250	1	285			-
SGRD4	KITCHEN	SD3	12"	250	1	263			-
SGRD5	KITCHEN	SD2	12"	250	1	272			-
SGRD6	KITCHEN	SD2	12"	246	1	178			-
SGRD7	DRIVE THRU	SD2	12"	250	1	172			-
SGRD8	KITCHEN	SD3	12"	250	1	276			-
SGRD9	KITCHEN	SD3	12"	250	1	207			-
SGRD10	OFFICE	SD4	8"	154	0.349	50			-
SGRD11	KITCHEN	SD3	12"	250	0.473	182			-

Completed By: Brianna Biggs on

National TAB

Project: 01-16-23 FREDDY'S - CLARKSVILLE, TN

System/Unit: AHU/RTU

Comfort. Under control.

Asset: RTU1 AREA:DINING

Unit Data		
	Design	**Actual**
MFG	LENNOX	TRANE
Serial Num	-	222410236D
Model Num	LGH150H4M	YHD150G3RHD19D0C1A200B0AA
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1 METAL MESH
OA Filter Size 1	-	16X60
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2
Num Final Filter 2	-	4
Final Filter Size 2	-	20X25X2

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	56HZ
Horsepower	5	3
Motor Rpm	-	1725/1425
Phase	3	3
Rated Voltage	208	208-230/460
Rated Amperage	-	9.4-9.2/4.6

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	1VP50X
Motor Bore Size	-	7/8”
Motor Sheave SetPt	-	1 TURN OUT
Fan Sheave Size	-	10.5”
Fan Sheave Bore	-	1-3/16”
Belt CL Distance	-	22” WITH TENSIONER
Num of Belts	-	1
Belt Size	-	BX68
Belt Alignment	-	VERIFIED GOOD

Test Data		
	Design	**Actual**
SF CFM	5000	
SF RPM	-	704
RA CFM	4100	
OA CFM	900	
RL Voltage	-	216/216/214
RL Amperage	-	9.5/9.7/10.2 (OVER)
SF Rotation	-	CW
RA Damper Position	-	
Min OA Damper Position	-	
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	

Performance Data		
	Design	**Actual**
MA Plenum SP	-	
Fan Suction SP	-	
Fan Discharge SP	-	
Total ESP	1.0"	
Fan Total SP	-	

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

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Notes: DIFFUSER DESIGN TOTALS =4850CFM. UNIT SCHEDULED AT 5000CFM.

National TAB

Project:01-16-23 FREDDY'S - CLARKSVILLE, TN

AHU/RTU

Comfort. Under control.

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"	475					-
SGRD2	DINING	SD1	12"	475					-
SGRD3	DINING	SD1	12"	475					-
SGRD4	CUSTOMER ORDERING	SD1	12"	475					-
SGRD5	CUSTOMER ORDERING	SD1	12"	425					-
SGRD6	DINING	SD1	12"	475					-
SGRD7	DINING	SD1	12"	475					-
SGRD8	DINING	SD1	12"	475					-
SGRD9	DINING	SD1	12"	475					-
SGRD10	DINING	SD1	12"	475					-
SGRD11	RR VESTIBULE	SD5	6"	50					-
SGRD12	RESTROOM	SD5	6"	50					-
SGRD13	RESTROOM	SD5	6"	50					-

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National TAB

Project: 01-16-23 FREDDY'S - CLARKSVILLE, TN

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: EF1 AREA:RESTROOM

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**
Motor MFG	-	QUEACE
Frame	-	NL
Horsepower	30.3W	15W
Motor Rpm	-	1550
Phase	1	1
Voltage (rated)	120	115
Amperage (rated)	-	0.4/0.22
Service Factor	-	NL

Test Data		
	Design	**Actual**
CFM	75	82
Fan RPM	900	DD
Fan Rotation	-	CCW
Motor RPM	-	DD
System SetPt	-	LOW
RL Voltage	-	120V
RL Amperage	-	0.31A
Total ESP	0.25"	UTO
Fan Inlet SP	-	UTO
Fan Discharge SP	-	UTO

Completed By: Jacob Davidson

Notes:

National TAB

Project: 01-16-23 FREDDY'S - CLARKSVILLE, TN

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: EF2 AREA:RESTROOM

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**
Motor MFG	-	QUEACE
Frame	-	NL
Horsepower	30.3W	15W
Motor Rpm	-	1550
Phase	1	1
Voltage (rated)	120	115
Amperage (rated)	-	0.4/0.22
Service Factor	-	NL

Test Data		
	Design	**Actual**
CFM	75	80
Fan RPM	900	DD
Fan Rotation	-	CCW
Motor RPM	-	DD
System SetPt	-	LOW
RL Voltage	-	121
RL Amperage	-	0.32
Total ESP	0.25"	UTO
Fan Inlet SP	-	UTO
Fan Discharge SP	-	UTO

Completed By: Jacob Davidson

Notes:

National TAB

Project: 01-16-23 FREDDY'S - CLARKSVILLE, TN

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: KEF1 AREA:HOOD 1

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	CASRE18DD	CASRE18DD
Serial Num	-	4994659
Type	UTILITY	UTILITY
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TECO WESTINGHOUSE
Frame	-	145T
Horsepower	1	1.5
Motor Rpm	-	1740
Phase	3	3
Voltage (rated)	208	230/460
Amperage (rated)	-	4.03/2.02
Service Factor	-	1.15

Test Data		
	Design	**Actual**
CFM	1600	1223
Fan RPM	1105	
Fan Rotation	-	CCW
Motor RPM	-	
System SetPt	-	33HZ
RL Voltage	-	68V
RL Amperage	-	4.0A
Total ESP	1.4"	UTO
Fan Inlet SP	-	UTO
Fan Discharge SP	-	UTO

Completed By: Brianna Biggs

Notes: UNABLE TO OBTAIN STATIC PRESSURE ON UTILITY FAN

National TAB

Project: 01-16-23 FREDDY'S - CLARKSVILLE, TN

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: KEF2 AREA:HOOD 2

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	DU50HFA	DU50HFA
Serial Num	-	4994659
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TELCO GREEN
Frame	-	NL
Horsepower	0.5	1/2
Motor Rpm	-	1800
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	6.3
Service Factor	-	NL

Test Data		
	Design	**Actual**
CFM	775	792
Fan RPM	1532	
Fan Rotation	-	CCW
Motor RPM	-	
System SetPt	-	61% ECM
RL Voltage	-	
RL Amperage	-	
Total ESP	1.250"	
Fan Inlet SP	-	
Fan Discharge SP	-	ATM

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Notes:

National TAB

Project: 01-16-23 FREDDY'S - CLARKSVILLE, TN

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: KEF3 AREA:HOOD 3

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	DU33HFA	DU33HFA
Serial Num	-	4994659
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TELCO GREEN
Frame	-	NL
Horsepower	0.333	1/3
Motor Rpm	-	1800
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	4.3
Service Factor	-	NL

Test Data		
	Design	**Actual**
CFM	525	540
Fan RPM	1500	819
Fan Rotation	-	CCW
Motor RPM	-	819
System SetPt	-	46P
RL Voltage	-	
RL Amperage	-	
Total ESP	0.8"	
Fan Inlet SP	-	
Fan Discharge SP	-	ATM

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Notes:

National TAB

Project: 01-16-23 FREDDY'S - CLARKSVILLE, TN

System/Unit: Kitchen Hood Type I

Comfort. Under control.

Asset: HD1 AREA:

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	5424 ND-2	5424 ND-2
Job / Serial Num	-	4994659
Type	TYPE I CANOPY	TYPE I CANOPY
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	-	158
Filter2 FPM	-	158
Filter3 FPM	-	155
Filter4 FPM	-	144
Filter5 FPM	-	138
Filter Ave FPM(corr)	-	151 AT FLA
CFM	1600	1223

Cooking Equipment		
	Design	**Actual**
Item 1	-	GRIDDLE 1
Item 2	-	GRIDDLE 2

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Notes:

National TAB

Project: 01-16-23 FREDDY'S - CLARKSVILLE, TN

System/Unit: Kitchen Hood Type I

Comfort. Under control.

Asset: HD2 AREA:

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	5424 ND-2	5424 ND-2
Job / Serial Num	-	4994659
Type	TYPE I CANOPY	TYPE I CANOPY
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	-	157
Filter2 FPM	-	167
Filter3 FPM	-	165
Filter Ave FPM(corr)	-	163
CFM	775	792

Cooking Equipment		
	Design	**Actual**
Item 1	-	FRYERS

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Notes:

National TAB

Project: 01-16-23 FREDDY'S - CLARKSVILLE, TN

System/Unit: Kitchen Hood Type II

Comfort. Under control.

Asset: HD3 AREA:

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	4224- VHB-G	4224- VHB-G
Serial Num	-	4994659
Type	TYPE II CANOPY	TYPE II CANOPY
Hood length	42"	42"
Hood Width	42"	42"

Test Data		
	Design	**Actual**
Exhaust CFM	525	540

Completed By: Jacob Davidson

Notes: