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: 11/22/2022

PROJECT

11-21 TACO BELL - BLYTHEWOOD, SC

209 BLYTHEWOOD RD

BLYTHEWOOD, SC

Client

Flynn Restaurant Group
6200 Oak Tree Boulevard
Suite 250
Independence, OH 44131

National TAB

Project: 11-21 TACO BELL - BLYTHEWOOD, SC

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 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.

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11-21 TACO BELL - BLYTHEWOOD, SC

Project Issue Information

Issue Name : EF1 unable to be opened

Description : Unable to open EF1 due to connection not being long enough.

Created By : National TAB **Assigned To :** National TAB - Will Turnbough

Status : Open

Originated Date : 11/22/2022 - Brian Johnson - National TAB

Project Issue File Details

FuseITf61052463111498...

FuseIT004b5e906d414c7...

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	DINING	2400	2517	1500	1628	900	889	37.5%	35.3%						
RTU-2	KITCHEN	4000	4094	3400	3469	600	625	15.0%	15.3%						
EF-1	HOOD 1											1050	1080		
EF-2	RESTROOMS													150	154
TOTALS		6400	6611	4900	5097	1500	1514			0	0	1050	1080	150	154

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	1500	1514
TOTAL EXHAUST	1200	1234
NET AIRFLOW	300	280

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H20)
FRONT	0.005
SIDE	0.002
REAR	0.002
AVERAGE	**0.003**

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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11-21 TACO BELL - BLYTHEWOOD, SC

CheckList Information

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

CheckList Item Details

STORE FRONT

RTU-1

FuseITa016fec0ca7444e...

FuseIT44e722ab4031459...

RTU-2

FuseIT15a490c3c0114a6...

FuseITdfab5dc807fd4d7...

FuseIT7ba1bd300dce475...

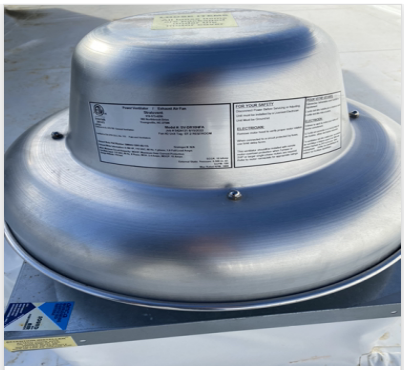
EF-1

FuseITa2a024d8f1564eb...

FuseIT3dd9d7bd35144e9...

EF-2

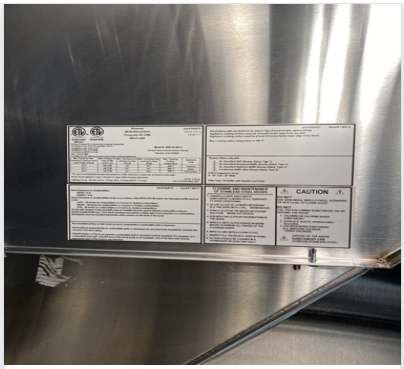
FuseITf564d2a28613497...



FuseIT0cbb888fd39f4c3...

HOOD -1

FuseIT1ce7034a9a1a42f...



FuseITa3b05b7f1a95490...

Notes/Comments :

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11-21 TACO BELL - BLYTHEWOOD, SC

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?	1/2 RTU-1 TURNED OFF DUE TO SMOKE ALARM 11-22-2022 WILL BE JUMPED OUT OF ALARM FOR TESTING
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	YES

Notes/Comments :

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11-21 TACO BELL - BLYTHEWOOD, SC

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
Motors are all operating below the FLA rating?	YES
Are belts tight?	YES
If direct drive unit is the speed controller working.	YES
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?	NO, HINGE NOT ABLE TO BE USED. MECHANICAL NEEDS TO MOVE HINGE KIT TO THE SIDE WHERE THE DISCONNECT IS

Flex conduit is long enough so that fan can be completely tilted back?	CURRENTLY NO
There is no major leakage around base of fan?	YES
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?	YES
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?	YES
DOCUMENTATION	
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	YES

Notes/Comments :

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11-21 TACO BELL - BLYTHEWOOD, SC

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".	NA

Notes/Comments :

Comfort. Under control.

11-21 TACO BELL - BLYTHEWOOD, SC

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	11/22/2022
TAB tech name / Firm	JOASH ALBIN/BRIAN JOHNSON
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?	

Notes/Comments :

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Project: 11-21 TACO BELL - BLYTHEWOOD, SC

System/Unit: AHU/RTU

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Asset: RTU1 AREA:DINING

Unit Data		
	Design	**Actual**
MFG	TRANE	TRANE
Serial Num	-	223210607L
Model Num	YHC092	YHC092F3RLA5589
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	35X15X1
Num Final Filter 1	-	4
Final Filter Size 1	-	20x25

Motor Data		
	Design	**Actual**
Motor MFG	-	DD
Frame	-	NO ACCESS
Horsepower	2.75	NO ACCESS
Motor Rpm	-	NO ACCESS
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	7.3

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	2400	2517
SF RPM	972	DD
RA CFM	1500	1628
OA CFM	900	889
RL Voltage	-	210/211/212
RL Amperage	-	3.6/3.5/3.5
SF Rotation	-	CCW
RA Damper Position	-	65%H/60%L
Min OA Damper Position	-	35%H/40%L
Min OA Damper Type	-	SODB
OA Enthalpy Setpt	-	NA

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.47"
Fan Suction SP	-	-0.60"
Fan Discharge SP	-	0.34"
Total ESP	0.69"	0.81"
Fan Total SP	-	0.94"

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

Completed By: JOASH ALBIN

Notes: OA for low speed checked by reading out a diffuser @330CFM in high speed, then putting the unit in low speed and reading out the same diffuser until it reached 230-240 and setting OA while the unit was in low. Testing strip was not complete since issue was bypassed due to smoke alarm issues

National TAB

Project:11-21 TACO BELL - BLYTHEWOOD, SC

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	S1	10"	315	1	82	345	331	105.1
SGRD2	DINING	S1	10"	315	1	475	348	335	106.3
SGRD3	DINING	S1	10"	315	1	328	331	339	107.6
SGRD4	DINING	S1	10"	315	1	346	346	321	101.9
SGRD5	DINING	S1	10"	315	1	264	339	328	104.1
SGRD6	DINING	S1	10"	315	1	470	346	320	101.6
SGRD7	CUSTOMER SERVICE	S1	10"	310	1	416	331	330	106.5
SGRD8	RESTROOM HALL	S1	10"	100	1	179	124	109	109.0
SGRD9	RESTROOM	S2	6"	50	1	83	120	54	108.0
SGRD10	RESTROOM	S2	6"	50	1	150	120	50	100.0

Completed By: Brianna Biggs on

National TAB

Project: 11-21 TACO BELL - BLYTHEWOOD, SC

System/Unit: AHU/RTU

Comfort. Under control.

Asset: RTU2 AREA:KITCHEN

Unit Data		
	Design	**Actual**
MFG	TRANE	TRANE
Serial Num	-	222910330D
Model Num	YHD150	YHD150G3RLD5589
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	60X19
Num Final Filter 1	-	4
Final Filter Size 1	-	20x20
Num Final Filter 2	-	4
Final Filter Size 2	-	20x25

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	56HZ
Horsepower	3	3//2
Motor Rpm	-	1725//1425
Phase	3	3
Rated Voltage	208	208/230
Rated Amperage	-	9.4/9.2

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	4.5"
Motor Bore Size	-	7/8"
Motor Sheave SetPt	-	3.0
Fan Sheave Size	-	K16229
Fan Sheave Bore	-	1"
Belt CL Distance	-	22"
Num of Belts	-	1
Belt Size	-	BX68
Belt Alignment	-	GOOD

Test Data		
	Design	**Actual**
SF CFM	4000	4094
SF RPM	589	576
RA CFM	3400	3469
OA CFM	600	625
RL Voltage	-	210
RL Amperage	-	210/211/212
SF Rotation	-	CCW
RA Damper Position	-	85%H.80%L
Min OA Damper Position	-	15%H/20%L

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.41"
Fan Suction SP	-	-0.51"
Fan Discharge SP	-	0.34"
Total ESP	0.74"	0.75"
Fan Total SP	-	0.85"

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

Completed By: JOASH ALBIN

Notes:

National TAB

Project:11-21 TACO BELL - BLYTHEWOOD, SC

AHU/RTU

Comfort. Under control.

Diffuser Supply (GRD)

RTU2/KITCHEN

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
SGRD1	KITCHEN	S3	330	330	1	314	320	329	99.7
SGRD2	KITCHEN	S3	330	330	1	362	368	350	106.1
SGRD3	KITCHEN	S3	330	330	1	348	350	344	104.2
SGRD4	KITCHEN	S1	300	300	1	327	331	329	109.7
SGRD5	KITCHEN	S1	300	300	1	314	318	318	106.0
SGRD6	KITCHEN	S1	300	300	1	304	307	315	105.0
SGRD7	KITCHEN	S1	300	300	1	332	339	307	102.3
SGRD8	OFFICE	S1	150	150	1	241	145	159	106.0
SGRD9	KITCHEN	S1	330	330	1	342	355	359	108.8
SGRD10	KITCHEN	S1	330	330	1	325	337	330	100.0
SGRD11	KITCHEN	S3	330	330	1	370	339	338	102.4
SGRD12	KITCHEN	S3	330	330	1	271	303	303	91.8
SGRD13	DRIVE THRU	S3	340	340	1	306	303	313	92.1

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Project: 11-21 TACO BELL - BLYTHEWOOD, SC

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: EF1 AREA:HOOD 1

Unit Data		
	Design	**Actual**
MFG	STRATOVENT	STRATOVENT
Model Num	SVDU50HFA	SVDU50HFA
Serial Num	-	5424131
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	HSSA
Frame	-	NL
Horsepower	0.50	0.5
Motor Rpm	-	1625
Phase	1	1
Voltage (rated)	120	115
Amperage (rated)	-	5.6
Service Factor	-	1.0

Test Data		
	Design	**Actual**
CFM	1050	1080
Fan RPM	1344	1380
Fan Rotation	-	CCW
Motor RPM	-	1625
System SetPt	-	93V
RL Voltage	-	115
RL Amperage	-	4.2
Total ESP	0.9"	0.91"
Fan Inlet SP	-	-0.91"
Fan Discharge SP	-	ATM

Completed By: JOASH ALBIN

Notes:

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Project: 11-21 TACO BELL - BLYTHEWOOD, SC

System/Unit: FAN - Exhaust

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Asset: EF2 AREA:RESTROOMS

Unit Data		
	Design	**Actual**
MFG	STRATOVENT	STRATOVENT
Model Num	SVDR10HFA	SVDR10HFA
Serial Num	-	5424131
Type	DOWNBLAST	DOWNBLAST
Configuration	HORIZONTAL	HORIZONTAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TELCO
Frame	-	NL
Horsepower	0.166	0.166
Motor Rpm	-	1800
Phase	1	1
Voltage (rated)	120	115
Amperage (rated)	-	2.8
Service Factor	-	NL

Test Data		
	Design	**Actual**
CFM	150	154
Fan RPM	1095	1069
Fan Rotation	-	CCW
Motor RPM	-	DD
System SetPt	-	76P
RL Voltage	-	115
RL Amperage	-	1.3
Total ESP	0.25"	0.24"
Fan Inlet SP	-	-0.24"
Fan Discharge SP	-	ATM

Completed By: JOASH ALBIN

Notes:

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Project:11-21 TACO BELL - BLYTHEWOOD, SC

FAN - Exhaust

Comfort. Under control.

Diffuser Ret/Exh (GRD)

EF2/RESTROOMS

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
EGRD1	RESTROOM	E1	6"	75	1	0	65	75	100.0
EGRD2	RESTROOM	E1	6"	75	1	0	68	79	105.3

Completed By: Brianna Biggs on

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Project: 11-21 TACO BELL - BLYTHEWOOD, SC

System/Unit: Kitchen Hood Type I

Comfort. Under control.

Asset: HD1 AREA:

Unit Data		
	Design	**Actual**
MFG	STRATOVENT	STRATOVENT
Model Num	SVBD2	SVBD2
Job / Serial Num	-	5424131
Type	TYPE I LOW PROXIMITY	TYPE I
Hood length	72"	72"
Hood Width	36"	36"

Test Data Exhaust		
	Design	**Actual**
Filter Type	BAFFLE	BAFFLE
Filter Size 1	16X16	16X16
Filter Qty 1	4	4
Filter AK factor size 1	1.66	1.66
Filter Total AK Area	6.64	6.64
Filter1 FPM	-	154
Filter2 FPM	-	174
Filter3 FPM	-	171
Filter4 FPM	-	155
Filter Ave FPM(corr)	-	164
CFM	1050	1080

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

Completed By: JOASH ALBIN

Notes:

LATION CALCULATIONS

Vbz=RpPz+RaAz

N (TABLE 403.3)
EATS)

COVER ALL HVAC DUCT SYSTEM OPENINGS TO PROTECT FROM CONSTRUCTION DUST AND DEB CONSTRUCTION IS COMPLETE.
HVAC SYSTEM IS OPERATED RE

Date: 11/22/2022