

**Report By:**

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**NATIONAL**

**TAB**

Comfort. Under control.

**Report: FINAL TAB REPORT  
Function: Test, Adjust, & Balance  
Date: 10/10/2022**

# **PROJECT**

## **10-03 FAMILY DOLLAR - LEWISPORT, KY**

8210 US 60

LEWISPORT, KY 42351

### **Client**

Oliphant Heating  
208 WOLLARD BLVD  
  
RICHMOND, MO

# National TAB

Project: 10-03 FAMILY DOLLAR - LEWISPORT, KY

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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.

### 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.

### 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	STORAGE	1400	1443	1250	1286	150	157	10.7%	10.9%						
RTU-2	WEST SALES	2800	2953	2150	2312	650	641	23.2%	21.7%						
RTU-3	EAST SALES	2800	2987	2150	2326	650	661	23.2%	22.1%						
RTU-4	SOUTH SALES	3500	3728	2725	2964	775	764	22.1%	20.5%						
EF-1	RESTROOM													75	78
EF-2	RESTROOM													75	77
<b>TOTALS</b>		10500	11111	8275	8888	2225	2223			0	0	0	0	150	155

#### NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	2225	2223
TOTAL EXHAUST	150	155
<b>NET AIRFLOW</b>	<b>2075</b>	<b>2068</b>

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H2O)
FRONT	0.023
SIDE	-
REAR	-
<b>AVERAGE</b>	<b>0.023</b>

#### FINAL CHECKS

- ACTUAL NET AIRFLOW COINCIDES WITH DESIGN: ✓

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- MEASURED PRESSURES COINCIDES WITH ACTUAL NET AIRFLOW: ✓

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- PRESSURE FALLS WITHIN IMC TOLERANCE OF +/-0.03" W.C. ✓

NOTES:



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### 10-03 FAMILY DOLLAR - LEWISPORT, KY

#### CheckList Information

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

#### CheckList Item Details

STORE FRONT

YES



FuseIT19996ab8b6c74ae...

RTU-1

YES



FuseIT8a05f43075a747c...

RTU-2

YES



**FuseIT6628cbb079f9451...**

RTU-3

YES



**FuseITb434b0cbcf514f9...**

RTU-4

YES



**FuseITe428a4647dec425...**

EF-1

YES



FuseITbbf99bc32b9c421...

EF-2

YES



FuseITf9759e8a2d8f4a8...

Notes/Comments :



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### 10-03 FAMILY DOLLAR - LEWISPORT, KY

#### 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

Review Plan Review Checklist, has it been signed off and meets our standards to start balancing? If not contact processor to ensure job is ready.	YES
All diffusers and grilles are installed and match design?	YES
Thermostats have power?	N/A, ALL SYSTEMS CONTROLLED BY BAS
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	YES

##### Notes/Comments :

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### 10-03 FAMILY DOLLAR - LEWISPORT, KY

#### 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")	SET TO ES5 FOR CARRIER UNITS
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?	N/A
There is no major leakage around base of fan?	N/A
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

**DOCUMENTATION**

Have trades/general contractor been notified about any issues and are they created on FaciliBuild? YES

**Notes/Comments :**



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### 10-03 FAMILY DOLLAR - LEWISPORT, KY

#### 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 :**



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### 10-03 FAMILY DOLLAR - LEWISPORT, KY

#### CheckList Information

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

#### CheckList Item Details

**FINAL TESTS**

**ADDITIONAL**

Thermostats are programmed?

N/A. ALL SYSTEMS CONTROLLED BY BAS

**Notes/Comments :**

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Project: 10-03 FAMILY DOLLAR - LEWISPORT, KY

System/Unit: AHU/RTU



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Asset: RTU1

AREA:STORAGE

Unit Data		
	Design	Actual
MFG	CARRIER	CARRIER
Serial Num	-	2222C09381
Model Num	HC	48GCEM05A2M5A6W1F0
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	30X16
Num Final Filter 1	-	2
Final Filter Size 1	-	16X24X2

Motor Data		
	Design	Actual
Motor MFG	-	NA
Frame	-	NA
Horsepower	-	NA
Motor Rpm	-	NA
Phase	3	1
Rated Voltage	208	208
Rated Amperage	-	7.1

Drive Data		
	Design	Actual

Test Data		
	Design	Actual
SF CFM	1400	1443
SF RPM	-	7.89V
RA CFM	1250	1286
OA CFM	150	157
RL Voltage	-	216.2
RL Amperage	-	5.46
SF Rotation	-	CORRECT
RA Damper Position	-	MECHANICAL LINKAGE
Min OA Damper Position	-	3.15V
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	ES5

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.49"
Fan Suction SP	-	-0.68"
Fan Discharge SP	-	0.23"
Total ESP	1.00"	0.72"
Fan Total SP	-	0.91

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

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Project: 10-03 FAMILY DOLLAR - LEWISPORT, KY

## AHU/RTU



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### Diffuser Supply (GRD)

#### RTU1/STORAGE

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	STORAGE	D	14X6	275	0.43	289	-	273	99.3
SGRD2	STORAGE	D	14X6	275	0.43	307	-	280	101.8
SGRD3	STORAGE	D	14X6	275	0.43	143	-	289	105.1
SGRD4	STORAGE	D	14X6	275	0.43	273	-	284	103.3
SGRD5	OFFICE	A	8"	100	1	164	-	108	108.0
SGRD6	RR HALL	A	8"	100	1	121	-	103	103.0
SGRD7	RESTROOM	C	8"	50	1	148	-	55	110.0
SGRD8	RESTROOM	C	8"	50	1	108	-	51	102.0

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Project: 10-03 FAMILY DOLLAR - LEWISPORT, KY

System/Unit: AHU/RTU



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Asset: RTU2

AREA:WEST SALES

Unit Data		
	Design	Actual
MFG	CARRIER	CARRIER
Serial Num	-	3422P61754
Model Num	HC	48HCED08B2M5A6F1J0
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	36X20
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	MARATHON
Frame	-	56HZ
Horsepower	-	2.4
Motor Rpm	-	1670
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	6.7

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VL44
Motor Bore Size	-	0.625"
Motor Sheave SetPt	-	4.5 OUT
Fan Sheave Size	-	AFD74
Fan Sheave Bore	-	1"
Belt CL Distance	-	16.5"
Num of Belts	-	1
Belt Size	-	A48
Belt Alignment	-	GOOD

Test Data		
	Design	Actual
SF CFM	2800	2953
SF RPM	-	765
RA CFM	2150	2312
OA CFM	650	641
RL Voltage	-	214/214.9/214.1
RL Amperage	-	3.65/4.32/4.16
SF Rotation	-	CCW
RA Damper Position	-	MECHANICAL LINKAGE
Min OA Damper Position	-	4.45V
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	ES5

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.57"
Fan Suction SP	-	-0.82"
Fan Discharge SP	-	0.54"
Total ESP	1.00"	1.11"
Fan Total SP	-	1.36

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

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Project: 10-03 FAMILY DOLLAR - LEWISPORT, KY

## AHU/RTU



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### Diffuser Supply (GRD)

#### RTU2/WEST SALES

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	SALES	B	12"	350	1	338	-	371	106.0
SGRD2	SALES	B	12"	350	1	407	-	366	104.6
SGRD3	SALES	B	12"	350	1	468	-	357	102.0
SGRD4	SALES	B	12"	350	1	321	-	361	103.1
SGRD5	SALES	B	12"	350	1	298	-	372	106.3
SGRD6	SALES	B	12"	350	1	415	-	385	110.0
SGRD7	SALES	B	12"	350	1	414	-	366	104.6
SGRD8	SALES	B	12"	350	1	346	-	375	107.1

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Project: 10-03 FAMILY DOLLAR - LEWISPORT, KY

System/Unit: AHU/RTU



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Asset: RTU3

AREA:EAST SALES

Unit Data		
	Design	Actual
MFG	CARRIER	CARRIER
Serial Num	-	3422P61753
Model Num	HC	48HCED08B2M5A6F1J0
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	36X20
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	MARATHON
Frame	-	56HZ
Horsepower	-	2.4
Motor Rpm	-	1670
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	6.7

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VL44
Motor Bore Size	-	0.625"
Motor Sheave SetPt	-	4.5 OUT
Fan Sheave Size	-	AFD74
Fan Sheave Bore	-	1"
Belt CL Distance	-	16.5"
Num of Belts	-	1
Belt Size	-	A48
Belt Alignment	-	GOOD

Test Data		
	Design	Actual
SF CFM	2800	2987
SF RPM	-	764
RA CFM	2150	2326
OA CFM	650	661
RL Voltage	-	216/216.8/215.7
RL Amperage	-	3.99/3.47/4.49
SF Rotation	-	CCW
RA Damper Position	-	MECHANICAL LINKAGE
Min OA Damper Position	-	4.45V
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	ES5

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.51"
Fan Suction SP	-	-0.75"
Fan Discharge SP	-	0.43"
Total ESP	1.00"	0.94"
Fan Total SP	-	1.18"

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

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Project: 10-03 FAMILY DOLLAR - LEWISPORT, KY

## AHU/RTU



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### Diffuser Supply (GRD)

#### RTU3/EAST SALES

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	SALES	B	12"	350	1	351	-	379	108.3
SGRD2	SALES	B	12"	350	1	441	-	384	109.7
SGRD3	SALES	B	12"	350	1	396	-	372	106.3
SGRD4	SALES	B	12"	350	1	351	-	384	109.7
SGRD5	SALES	B	12"	350	1	340	-	362	103.4
SGRD6	SALES	B	12"	350	1	419	-	365	104.3
SGRD7	SALES	B	12"	350	1	434	-	362	103.4
SGRD8	SALES	B	12"	350	1	308	-	379	108.3

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Project: 10-03 FAMILY DOLLAR - LEWISPORT, KY

System/Unit: AHU/RTU



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Asset: RTU4

AREA:SOUTH SALES

Unit Data		
	Design	Actual
MFG	CARRIER	CARRIER
Serial Num	-	2222P76406
Model Num	HC	48HCED11B2M5A6F1J0
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	36X20
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	MARATHON
Frame	-	56HZ
Horsepower	-	3.7
Motor Rpm	-	1760
Phase	3	3
Rated Voltage	208	230
Rated Amperage	-	9.2

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VM50
Motor Bore Size	-	0.875"
Motor Sheave SetPt	-	5 TURNS OUT
Fan Sheave Size	-	AFD74
Fan Sheave Bore	-	1"
Belt CL Distance	-	17"
Num of Belts	-	1
Belt Size	-	AX49
Belt Alignment	-	GOOD

Test Data		
	Design	Actual
SF CFM	3500	3728
SF RPM	-	868
RA CFM	2735	2964
OA CFM	775	764
RL Voltage	-	215.4/216.3/215.0
RL Amperage	-	4.99/5.62/6.09
SF Rotation	-	CCW
RA Damper Position	-	MECHANICAL LINKAGW
Min OA Damper Position	-	4.35V
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	ES5

Performance Data		
	Design	Actual
MA Plenum SP	-	-.71"
Fan Suction SP	-	-1.02"
Fan Discharge SP	-	0.36"
Total ESP	1.00"	1.07"
Fan Total SP	-	1.43"

General		
	Design	Actual
Fan Rotation Correct	-	YES
Unit Filters Clean	-	YES/CONSTRUCTION FILTERS
Condensate Drain Installed	-	YES

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## AHU/RTU



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**Diffuser Supply (GRD)**

**RTU4/SOUTH SALES**

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	SALES	B	12"	440	1	467	-	476	108.2
SGRD2	SALES	B	12"	435	1	504	-	477	109.7
SGRD3	SALES	B	12"	435	1	549	-	454	104.4
SGRD4	SALES	B	12"	440	1	434	-	454	103.2
SGRD5	SALES	B	12"	440	1	467	-	483	109.8
SGRD6	SALES	B	12"	435	1	477	-	458	105.3
SGRD7	SALES	B	12"	435	1	540	-	464	106.7
SGRD8	SALES	B	12"	440	1	485	-	462	105.0

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Project: 10-03 FAMILY DOLLAR - LEWISPORT, KY

System/Unit: FAN - Exhaust



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Asset: EF1

AREA:RESTROOM

Unit Data		
	Design	Actual
<b>MFG</b>	GREENHECK	BROAN
<b>Model Num</b>	SP-B110	LP-80B
<b>Serial Num</b>	-	12H05C1
<b>Type</b>	CEILING	CEILING
<b>Configuration</b>	VERTICAL	HORIZONTAL

Motor Data		
	Design	Actual
<b>Motor MFG</b>	-	BROAN-NUTONE
<b>Frame</b>	-	NL
<b>Horsepower</b>	80W	NL
<b>Motor Rpm</b>	-	735
<b>Phase</b>	1	1
<b>Voltage (rated)</b>	120	120
<b>Amperage (rated)</b>	-	0.18
<b>Service Factor</b>	-	NL

Test Data		
	Design	Actual
<b>CFM</b>	75	78
<b>Fan RPM</b>	-	735
<b>Fan Rotation</b>	-	CW
<b>Motor RPM</b>	-	735
<b>System SetPt</b>	-	FULL SPEED
<b>RL Voltage</b>	-	122.1
<b>RL Amperage</b>	-	0.17
<b>Total ESP</b>	0.25"	NA
<b>Fan Inlet SP</b>	-	NA
<b>Fan Discharge SP</b>	-	NA

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Project: 10-03 FAMILY DOLLAR - LEWISPORT, KY

System/Unit: FAN - Exhaust



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Asset: EF2

AREA:RESTROOM

Unit Data		
	Design	Actual
MFG	GREENHECK	GREENHECK
Model Num	SP-B110	SP-B110
Serial Num	-	12HO2C1
Type	CEILING	CEILING
Configuration	VERTICAL	HORIZONTAL

Motor Data		
	Design	Actual
Motor MFG	-	BROAN-NUTONE
Frame	-	NL
Horsepower	80W	NL
Motor Rpm	-	735
Phase	1	1
Voltage (rated)	120	120
Amperage (rated)	-	0.18
Service Factor	-	NL

Test Data		
	Design	Actual
CFM	75	77
Fan RPM	-	735
Fan Rotation	-	CW
Motor RPM	-	735
System SetPt	-	FULL SPEED
RL Voltage	-	121.4
RL Amperage	-	0.17
Total ESP	0.25"	NA
Fan Inlet SP	-	NA
Fan Discharge SP	-	NA

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