

**Report By:**

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**Report: Test and Balance**

**Date: 10/16/2018**

**PROJECT**  
**FREDDY'S - EL DORADO, KS (EL DORADO)**

1809 W CENTRAL  
EL DORADO, KS

**Client**

Freddy's Frozen Custard & Steakburgers (CORPORATE)  
260 N Rock Rd  
Suite 200  
Wichita, KS 67206

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# National TAB

Project: FREDDY'S - EL DORADO, KS (EL DORADO)

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## Recommendation List

Assigned Organization: National TAB

Status: Not Submitted

Asset:

Recommendation (Clean/Repair/Replace/Info)	
Repair	EF 1 has a bad belt and needs to be replaced.
Repair	EF 2 is missing the grease cup.
Repair	EF 4 is not running. There is no power to the motor.
Info	The hoods are under performing and smoke is rolling out the front. To improve hood capture, National TAB will turn off the MAU. We will also reduce the supply air around the hood. This will make the localized space negative and improve hood capture.
Info	The RTUs are low on airflow due to restrictions at the curb transition. The size of the transition is not large enough to have the required amount of return air. National TAB will investigate if the transition can be modified during the next Renew cycle with food service. So, we can be above the ceiling during unoccupied hours.

Notes/Comments:



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## Project Summary

### Preface

The summary below provides a quick understanding of how well your HVAC systems balanced in respect to the design criteria. The summary concludes with a quick understanding of your building environment and possible suggestions for each of your systems after testing has been performed. 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. Our focus is 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. Also, enclosed are pictures of building assets and items listed below that will provide your team with more insight

### Facility Identification and TAB Requirements

Freddy's (El Dorado) is located at 1809 W Central Eldorado, KS . The mechanical equipment to be tested, adjusted, and balanced includes: (2) Roof Top Units (RTU), (3) Exhaust Fans (EF), (1) Make Up Air Units (MUA), (2) Kitchen Hoods, and all associated air devices.

#### Constant Volume RTU's with Lay-In Ceiling Diffusers

Each of the RTU's were measured at their terminal devices utilizing a flow hood. The sum of these readings is equal to the total flow for that particular unit. The total flow of each RTU was 260 to 330 cfm per ton. The desired range is 350 to 400 cfm per ton. The units are maximized and unable to reach the desired cfm.

#### 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.

Total flow for the MAU (Make-up Air Unit) unit was measured by readings taken at the discharge of the hood's perforated supply plenum. Readings taken with a velocity matrix were averaged and multiplied by a manufacturer's corrected area.

#### General Exhaust Fans

EF 4 was not operational to be measured with a flow hood.

### Final Building Tests

After completing the test and balance, the final building pressure was recorded at 0.009" W.C. average. This pressure falls within the recommended tolerances by the International Mechanical Code of +0.02" W.C. to -0.02" W.C. It is desired for a restaurant to have a slightly positive building pressure and the coincides with the measurement and net airflow.

The hood capture was tested at the perimeter of the hood and the cook top level with the equipment heat "on" and 85 to 90% capture was observed.

The RTU / AHU units are Carrier 10 ton packaged roof top units. Both units tested initial between 200 to 240 cfm per ton. The fan speed is increased to the maximum speed available with this drive. The motor is not at FLA. Both units final test showed they were 260 to 330 cfm per ton. The static pressures indicate there could be restriction in the duct system. The line diagram drawings show the basic duct design of the main supply and return ducts. The diffusers are joined to the main duct by flex duct. Some of the flex duct runs are long and provide restriction. Removing flex duct and replacing it with hard pipe is recommended on both the supply and return side of these units. The filters have been changed every four weeks on a regular schedule. The coils show some accumulation but the pressure drop across the filters and coil is normal.

The hood capture is a major issue. The first issue is the age and condition of the associated exhaust fans. Both fans are maximized, and EF 2 running in FLA. EF 1 amperage could not be tested because there are wiring access and safety issues. I was not able to get these readings. There are three diffusers on the cookline in front of the hoods. Two of these diffusers are 4-way diffusers that need to be replaced with perforated return diffusers to eliminate cross drafting issues. One diffuser is a perforated supply diffuser it is also recommended to replace it.



**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	East	4000	3301	3400	2711	600	590	15.0%	17.9%						
RTU-2	West	4000	2638	3700	2333	300	305	7.5%	11.6%						
MUA-1	Griddle Hood										307				
EF-1	Griddle Hood												528		
EF-2	Fryer Hood												671		
EF-4	Restrooms														0
<b>TOTALS</b>		8000	5939	7100	5044	900	895			0	307	0	1199	0	0

**NET BUILDING AIRFLOW CALCULATION**

TOTALS	DESIGN	ACTUAL
TOTAL OA	900	1202
TOTAL EXHAUST	0	1199
<b>NET AIRFLOW</b>	<b>900</b>	<b>3</b>

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H2O)
FRONT	0.009
SIDE	0.009
REAR	0.01
<b>AVERAGE</b>	<b>0.0093</b>

**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:

# Freddy's

## El Dorado KS



Store Front



RTU 1



RTU 2



EF1



EF 2



MUA



Hood 1



Hood 2



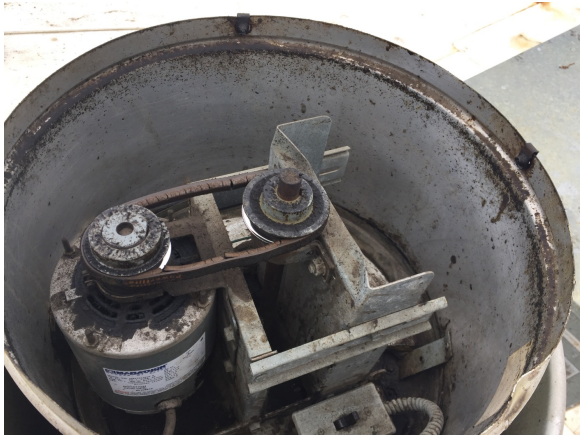
Kitchen Diffusers



Hood EF Wiring

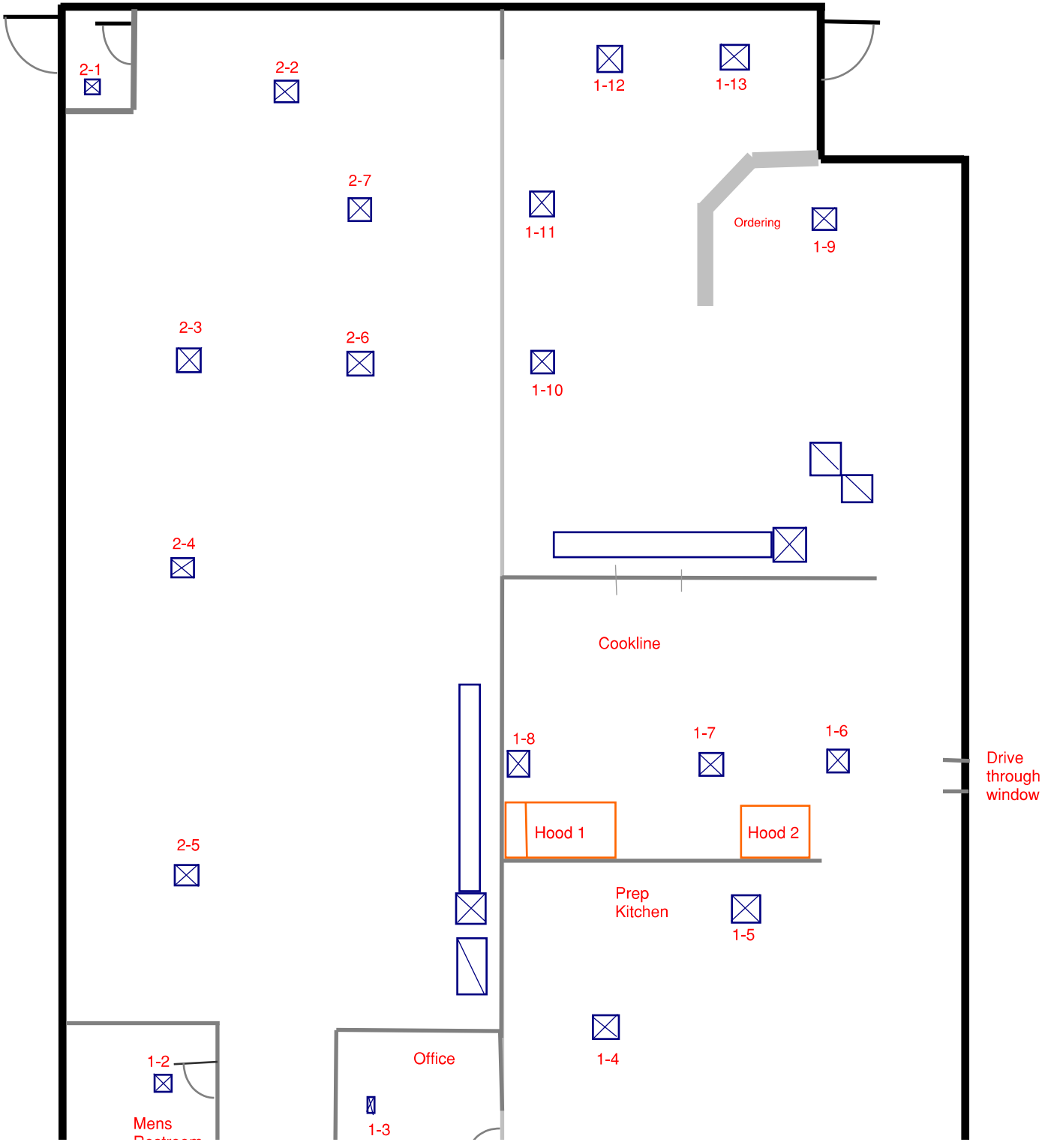


EF Condition



EF 4 (Not Running)







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Project: FREDDY'S - EL DORADO, KS (EL DORADO)



## TECH - STEP 1: INITIAL WALKTHROUGH

Assigned Organization: National TAB

Status: Not Submitted

Asset:

INITIAL SITE WALKTHROUGH	
All diffusers and grilles are installed and match design?	NA
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?	NA

### Notes/Comments:

No plans



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## TECH - STEP 2: UNIT DATA AND EVAL

Assigned Organization: National TAB

Status: Not Submitted

Asset:

<b>UNIT DATA AND EVALUATION WHILE GATHERING UNIT DATA CHECK THE FOLLOWING:</b>	
<b>RTU's/AHU's</b>	
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.	NA
Is gas piping installed and valves turned on?	Yes
Unit free of noticeable noise and vibration	Yes
<b>EF's</b>	
Rotation is correct?	Yes
Belts are tight?	Yes see issues
Grease cup installed on hood fan?	No
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?	Yes
Is the motor operating below the motor FLA rating?	No
For restroom fan(s) is the back draft damper installed and can it fully open?	No
Unit free of noticeable noise and vibration?	No
<b>MUA</b>	
Rotation is correct?	Yes



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Gas piping is installed and valves are in on position?	No
Heater tested and is functional?	No
Internal motorized damper is fully opening?	No
Motor is operating below the FLA rating?	Yes
Unit free of noticeable noise and vibration?	Yes
<b>HOODS</b>	
Kitchen equipment installed in proper places?	Yes
Can kitchen equipment be turned on for final smoke test?	Yes
Griddle is completely centered underneath hood?	Yes
<b>DOCUMENTATION</b>	
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	Yes
<b>PICTURES TAKEN OF:</b>	
All Issues	Yes
Each Piece of equipment	Yes
Each Hood	Yes
Front of Store	Yes

**Notes/Comments:**

RTU 2 manual damper. EF 1 bad belt needs replacment. EF 2 missing grease cup EF 1 and EF 2 are Running in SFA. The MUA is not a heated unit.



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## TECH - STEP 3: TEST, ADJUST AND BALANCE

Assigned Organization: National TAB

Status: Not Submitted

Asset:

<b>TEST, ADJUST, AND BALANCE ALL EQUIPMENT:</b>	
<b>DURING TESTING MAKE NOTE OF THE FOLLOWING:</b>	
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".	

### Notes/Comments:

The space was comfortable during the current wether and testing conditions.



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## TECH - STEP 4: FINAL TESTS

Assigned Organization: National TAB

Status: Not Submitted

Asset:

<b>FINAL TESTS</b>	
<b>HOOD CAPTURE TEST</b>	
List equipment turned on for testing	All
List smoke candle type used	45 Second
Smoke test capture - Perimeter of hood	100
Smoke test capture - Top of cooking surface	100
<b>WITNESS</b>	
Date test was completed	3/30/2018
TAB tech name / Firm	Mitchell Kerr / National TAB
Site super name / Firm	Joey Gehlen / Freddys
Owner representative name / Firm (if Applicable)	Joey Gehlen / Freddys
Building pressure at front & back doors (All Systems On)	0.009
<b>ADDITIONAL</b>	
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
<b>Thermostats Schedules: Program all thermostats to following settings:</b>	
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



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Set a Partial Screen Lock for Thermostats (i.e., make sure temperature is adjustable but not schedule)	No
Password is set to 999 for Partial Screen Lock?	No
<b>RTU Economizers</b>	
<b>Note: These instructions are for Lennox units. There are similar settings for other OEMs. Call office for assistance if needed.</b>	
Enthalpy is set to "D" for all three units	Yes
"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:**

Thermosts are exsiting units and the fan can not be interlocked with schedule operation.



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Project: FREDDY'S - EL DORADO, KS (EL DORADO)

System/Unit: AHU/RTU



Asset: RTU1

AREA: KITCHEN/DINING

Unit Data		
	Design	Actual
MFG	NA	CARRIER
Model Num	NA	48TCED12A2A5 AOA0A0
Serial Num	-	1313G40098
Type	-	CENTRIFUGAL
Configuration	-	DOWNBLAST
Num OA Filters 1	-	1
OA Filter Size 1	-	35X19 4.61
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	MARATHON
Frame	-	56 HZ
Horsepower	-	NOT LISTED
Motor Rpm	-	1725
Phase	-	3
Rated Voltage	-	230/460
Rated Amperage	-	10.6

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VM50
Motor Bore Size	-	7/8
Motor Sheave SetPt	-	5.0 MAXIMIZED
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	-	3301
SF RPM	-	1071
RA CFM	-	2711
OA CFM	600	590
RL Voltage	-	215/215/215
RL Amperage	-	8.2/7.7/8.2
SF Rotation	-	CCW
RA Damper Position	-	90
Min OA Damper Position	-	10
Min OA Damper Type	-	ECONOMIZING HORIZONTAL BLADE
Brake Horse Power	-	NA

Performance Data		
	Design	Actual
MA Plenum SP	-	-1.33
Fan Suction SP	-	-1.70
Fan Discharge SP	-	0.36
Total ESP	-	1.69
Fan Total SP	-	2.06

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

Completed By: Mitch Kerr on 03/30/2018

Notes: Starting rpm 849. This is a 10 ton unit running with the sheave maximized.



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Project: FREDDY'S - EL DORADO, KS (EL DORADO)

System/Unit: AHU/RTU



## Diffuser Supply (GRD)

### RTU1 / KITCHEN/DINING

Asset	Area Served	Type	Size	CFM(1)	CFM(2)	FINAL CFM
SGRD1	Womens Restroom			32	43	43
SGRD2	Mens Restroom			36	66	66
SGRD3	Office			38	40	40
SGRD4	Prep Kitchen			165	225	225
SGRD5	Prep Kitchen			147	190	190
SGRD6	Cookline			271	342	342
SGRD7	Cookline			270	360	360
SGRD8	Cookline			230	313	313
SGRD9	Ordering			360	498	498
SGRD10	Dining			272	303	303
SGRD11	Dining			211	245	245
SGRD12	Dining			178	280	280
SGRD13	Dining			231	396	396

Completed By: Mitch Kerr on 03/30/2018

Asset	Area Served	Notes



# National TAB

Project: FREDDY'S - EL DORADO, KS (EL DORADO)

System/Unit: AHU/RTU



Asset: RTU2

AREA: DINING

Unit Data		
	Design	Actual
MFG	NA	CARRIER
Model Num	NA	48TCED12A2A5 AOA0A0
Serial Num	-	1313G40099
Type	-	CENTRIFUGAL
Configuration	-	DOWNBLAST
Num OA Filters 1	-	1
OA Filter Size 1	-	12X10.5 0.88
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	MARATHON
Frame	-	56HZ
Horsepower	-	NOT LISTED
Motor Rpm	-	1725
Phase	-	3
Rated Voltage	-	208-230/460
Rated Amperage	-	10.6/5.3

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VM50
Motor Bore Size	-	7/8
Motor Sheave SetPt	-	5.0 MAXIMIZED
Fan Sheave Size	-	AFD74
Fan Sheave Bore	-	1
Belt CL Distance	-	17
Num of Belts	-	1
Belt Size	-	AX49
Belt Alignment	-	YES

Test Data		
	Design	Actual
SF CFM	-	2638
SF RPM	-	1075
RA CFM	-	2333
OA CFM	300	305
RL Voltage	-	216/216/216
RL Amperage	-	7.9/8.2/9.2
SF Rotation	-	CCW
RA Damper Position	-	NONE
Min OA Damper Position	-	33%
Min OA Damper Type	-	MANUAL
Brake Horse Power	-	NA

Performance Data		
	Design	Actual
MA Plenum SP	-	-1.10
Fan Suction SP	-	-1.39
Fan Discharge SP	-	0.62
Total ESP	-	1.72
Fan Total SP	-	2.01

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

Completed By: Mitch Kerr on 03/30/2018

Notes: Starting rpm 846. This is a 10 ton unit running with the sheave maximized.



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Project: FREDDY'S - EL DORADO, KS (EL DORADO)

System/Unit: AHU/RTU



## Diffuser Supply (GRD)

### RTU2 / DINING

Asset	Area Served	Type	Size	CFM(1)	CFM(2)	FINAL CFM
SGRD1	VESTIBULE	4WAY	2X2	250	327	327
SGRD2	DINING	4WAY	2X2	313	428	428
SGRD3	DINING	4WAY	2X2	248	321	321
SGRD4	DINING	4WAY	2X2	138	185	185
SGRD5	DINING	4WAY	2X2	473	621	621
SGRD6	DINING	4WAY	2X2	322	417	417
SGRD7	DINING	4WAY	2X2	257	339	339

Completed By: Mitch Kerr on 03/30/2018

Asset	Area Served	Notes
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Project: FREDDY'S - EL DORADO, KS (EL DORADO)

## System/Unit: FAN - Supply



Asset: MAU1

AREA: HOOD 1,2

Unit Data		
	Design	Actual
MFG	NA	GREEN HECK
Model Num	NA	KSFB-109-H15-DBC
Serial Num	-	04D02086
Type	-	CENTRIFUGAL
Configuration	-	VERTICAL DISCHARGE

Test Data		
	Design	Actual
CFM	-	307
SF RPM	-	662
Motor RPM	-	1783
RL Voltage	-	121
RL Amperage	-	5.3
Total ESP	-	NO ACCESS
Fan Discharge SP	-	NO ACCESS

Motor Data		
	Design	Actual
Motor MFG	-	GE
Frame	-	48Z
Horsepower	-	1/4
Motor Rpm	-	1725
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	5.1
Service Factor	-	1.35

General		
	Design	Actual
Fan Rotation Correct	-	YES

Drive Data		
	Design	Actual
Motor Sheave Size	-	1VL34
Motor Bore Size	-	1/2
Fan Sheave Size	-	AK56
Fan Sheave Bore	-	3/4
Belt CL Distance	-	16
Num of Belts	-	1
Belt Size	-	3L440
Belt Alignment Verified	-	YES

Gas Heat		
	Design	Actual
Heater Operates (y/n)	-	N/A NO HEAT
Flame Status (pass/fail)	-	N/A
Inlet Air Temp SetPt	-	N/A
Discharge Air Temp SetPt	-	N/A
Air Flow Switch SP Actual	-	N/A

Completed By: Mitch Kerr on 03/30/2018

Notes: Belt needs replacement  
 Sheave is minimized motor is running in SFA.  
 Found shut off at disconnect.  
 Intake size: (2) 13.75 x 23 4.39



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Project: FREDDY'S - EL DORADO, KS (EL DORADO)

## System/Unit: FAN - Exhaust



Asset: EF1

AREA: GRILL HOOD

Unit Data		
	Design	Actual
MFG	NA	GREENHECK
Model Num	NA	CUBE-098-4-6
Serial Num	-	04DO4496
Type	-	CENTRIFUGAL
Configuration	-	UPBLAST

Test Data		
	Design	Actual
CFM	-	528
Fan RPM	-	1637
Fan Rotation	-	CW
Motor RPM	-	1765
RL Voltage	-	124
RL Amperage	-	4.1
Suction ESP	-	-0.34
Discharge ESP	-	ATM
Total ESP	-	0.34
Brake Horse Power	-	SEE NOTES

Motor Data		
	Design	Actual
Motor MFG	-	MARATHON
Frame	-	48Z
Horsepower	-	1/4
Motor Rpm	-	1725
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	5
Service Factor	-	1.35

Drive Data		
	Design	Actual
Motor Sheave Size	-	2 5/8
Motor Bore Size	-	1/2
Motor Sheave SetPt	-	MAXIMIZED
Fan Sheave Size	-	3
Fan Sheave Bore	-	3/4
Belt CL Distance	-	5 3/8
Num of Belts	-	1
Belt Size	-	4L200

Completed By: Mitch Kerr on 03/30/2018

- Notes:
- Wiring inside Curb
  - Belt badly needs replaced
  - Grease cup missing
  - There is not a safe wiring access to get voltage and amperage readings.



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Project: FREDDY'S - EL DORADO, KS (EL DORADO)

## System/Unit: FAN - Exhaust



Asset: EF2

AREA: FRYER HOOD

Unit Data		
	Design	Actual
MFG	NA	GREENHECK
Model Num	NA	CUBE-101-3-6
Serial Num	-	04D04501
Type	-	CENTRIFUGAL
Configuration	-	UPBLAST

Test Data		
	Design	Actual
CFM	-	671
Fan RPM	-	1798
Fan Rotation	-	CW
Motor RPM	-	1729
RL Voltage	-	124
RL Amperage	-	6.9
Suction ESP	-	-0.85
Discharge ESP	-	ATM
Total ESP	-	0.85
Brake Horse Power	-	0.36

Motor Data		
	Design	Actual
Motor MFG	-	US MOTOR
Frame	-	NOT LISTED
Horsepower	-	1/3
Motor Rpm	-	1725
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	6.4
Service Factor	-	1.35

Drive Data		
	Design	Actual
Motor Sheave Size	-	3 1/4
Motor Bore Size	-	1/2
Motor Sheave SetPt	-	3.25 MAXIMIZED
Fan Sheave Size	-	3 1/4
Fan Sheave Bore	-	3/4
Belt CL Distance	-	6 1/4
Num of Belts	-	1
Belt Size	-	4L220

Completed By: Mitch Kerr on 03/30/2018

Notes: Wiring inside Curb  
Fan is running in SFA



# National TAB

Project: FREDDY'S - EL DORADO, KS (EL DORADO)

## System/Unit: FAN - Exhaust



Asset: EF4

AREA: RESTROOM

Unit Data		
	Design	Actual
MFG	NA	CENTRI MASTER
Model Num	NA	PRN080
Serial Num	-	02E8091
Type	-	CENTRIFUGAL
Configuration	-	DOWNBLAST

Test Data		
	Design	Actual
CFM	-	0
Fan RPM	-	DIRECT DRIVE
Fan Rotation	-	SEE NOTES
Motor RPM	-	DIRECT DRIVE
RL Voltage	-	SEE NOTES
RL Amperage	-	SEE NOTES
Suction ESP	-	SEE NOTES
Discharge ESP	-	ATM
Total ESP	-	SEE NOTES
Brake Horse Power	-	SEE NOTES

Motor Data		
	Design	Actual
Motor MFG	-	GE
Frame	-	NOT LISTED
Horsepower	-	1/10
Motor Rpm	-	NOT LISTED
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	3
Service Factor	-	1.0

Drive Data		
	Design	Actual
Motor Sheave Size	-	DIRECT DRIVE
Motor Bore Size	-	DIRECT DRIVE
Motor Sheave SetPt	-	DIRECT DRIVE
Fan Sheave Size	-	DIRECT DRIVE
Fan Sheave Bore	-	DIRECT DRIVE
Belt CL Distance	-	DIRECT DRIVE
Num of Belts	-	DIRECT DRIVE
Belt Size	-	DIRECT DRIVE

Completed By: Mitch Kerr on 03/29/2018

Notes: Fan is not running. There is no power to the motor. This fan does not appear to be operational and the motor housing is covered in cobwebs.



# National TAB

Project: FREDDY'S - EL DORADO, KS (EL DORADO)

## System/Unit: Kitchen Hood Type I



Asset: HD1

AREA: GRILL

Unit Data		
	Design	Actual
MFG	WITH PSP	WITH PSP
Model Num	NA	NOT LEGIBLE
Job / Serial Num	-	NOT LEGIBLE
Type	-	TYPE 1 LOW PROXIMITY
Hood length	-	26
Hood Width	-	52
Supply Plenum Type	-	BACK SUPPLY MUA

Performance Data		
	Design	Actual
Exh-Supply Net CFM	-	221
Smoke Generation Type	-	45 SECOND
Cooking Equip Heat On	-	YES
Hood Capture %	-	90 SEE NOTES
End Panels Installed (Y/N)	-	YES

General		
	Design	Actual
Third Party Witness	-	JOEY GEHLEN
Third Party Company	-	FREDDYS
Tech Witness	-	MITCHELL KERR
Tech Company	-	NATIONAL TAB

Test Data Exhaust		
	Design	Actual
Filter Type	-	X TRACTOR
Filter Size 1	-	16X16
Filter Qty 1	-	3
Filter AK factor size 1	-	1.53
Filter Total AK Area	-	4.59
Filter1 FPM	-	106
Filter2 FPM	-	121
Filter3 FPM	-	117
Filter Ave FPM(corr)	-	115
CFM	-	528

Cooking Equipment		
	Design	Actual
Item 1	-	GRIDDLE

Completed By: Mitch Kerr on 03/30/2018

Notes: The smoke is only partially captured when it is held over the front of the griddle. The associated fan performance is weak due to the age and condition of the fan. Please see summary for more details.



# National TAB

Project: FREDDY'S - EL DORADO, KS (EL DORADO)

## System/Unit: Kitchen Hood Type I



Asset: HD2

AREA: FRYER

Unit Data		
	Design	Actual
MFG	WITH PSP	CAPTIVE AIRE
Model Num	NA	5424 ND2
Job / Serial Num	-	NOT LEGIBLE
Type	-	TYPE 1 CANOPY
Hood length	-	54
Hood Width	-	56
Supply Plenum Type	-	NONE

Performance Data		
	Design	Actual
Exh-Supply Net CFM	-	671
Smoke Generation Type	-	45 SECOND
Cooking Equip Heat On	-	YES
Hood Capture %	-	85
End Panels Installed (Y/N)	-	YES

Test Data Exhaust		
	Design	Actual
Filter Type	-	CAPTRATE SOLO
Filter Size 1	-	16X16
Filter Qty 1	-	3
Filter AK factor size 1	-	1.62
Filter Total AK Area	-	4.86
Filter1 FPM	-	125
Filter2 FPM	-	147
Filter3 FPM	-	142
Filter Ave FPM(corr)	-	138
CFM	-	671

General		
	Design	Actual
Third Party Witness	-	JOEY GEHLEN
Third Party Company	-	FREDDYS
Tech Witness	-	MITCHELL KERR
Tech Company	-	NATIONAL TAB

Cooking Equipment		
	Design	Actual
Item 1	-	FRYERS

Completed By: Mitch Kerr on 03/30/2018

Notes: 583 starting cfm

The hood is rolling out at the front of the hood. The associated fan performance is weak due to the age and condition of the fan. Please see summary for more details.