Report By:

National TAB
1329 E Kemper Rd, Ste 4210
Cincinnati, OH 45246

Report: **Test and Balance**
Date: **5/18/2018**

PROJECT

RED ROBIN - BARTONSVILLE, PA (REVIVE)

250 Route 611, Crossroads Mall
BARTONSVILLE, PA 18321

Client

Lehigh Valley Restaurant Group
6802 Hamilton Blvd
Allentown, PA 18106

National TAB

Project: RED ROBIN - BARTONSVILLE, PA (REVIVE)

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Summary and Recommendation List

Assigned Organization: National TAB

Status: Not Submitted

Asset:

Summary	
.	Purpose of visit to the Red Robin in Bartonsville PA was to evauate the cause for high humidity. Initial building pressure was slightly positive at +0.01" W.c.. The supply airflows for all three RTU's were found to be well below OEM minimum recommendation of 320 CFM/ton: 268 CFM/ton , 261 CFM/ton, 303 CFM/ton for RTU-1, 2, and 3, respectively.) The OA ratios were also high: 28%, 33%, 49%. Adjustment was made to increase airflow to RTU-1 and this unit is now operating at acceptable rate. Attempted to speed RTU-2 up and doing so caused the motor to stop running. Slowed the unit back down and found the motor RPM was only 2909 out of rating of 3450 RPM. The motor is degrading and needs to be replaced. Once replaced the airflow should increase about 18% and will be operating closer to acceptable tolerances. Reduced the OA on all three units. RTU-1 economizer is not functional and is propped up. RTU-2 and 3 was reduced. Final building pressure was +0.035" and +882 CFM. Further action
.	required and described below:
Recommendation (Clean/Repair/Replace/Info)	
REPAIR - NEEDS IMMEDIATE ATTENTION	Attempted to speed RTU-2 up and doing so caused the motor to stop running. Slowed the unit back down and found the motor RPM was only 2909 out of rating of 3450 RPM. The motor is degrading and needs to be replaced.
REPAIR - HIGH PRIORITY	RTU 2 has a damaged tension pulley. Recommend repairing
CLEAN - HIGH PRIORITY	Recommend cleaning blowers for all RTU's. Evaluate the evaporator coils to determine if they require cleaning (not verified by NTAB while on site)
REPAIR - HIGH PRIORITY	Motor sheave for MUA-1 is seized with rust and could not be adjusted. Recommend breaking free with pipe wrench so that adjustment during final balancing is possible. If not salvagable, then recommend replacing with identical pulley (2VP42 x 1-1/8")
REPAIR - HIGH PRIORITY	Motor sheave for RTU-3 (kitchen) needs to be replaced with a VP44 x 7/8" pulley in order to increase motor speed as close to FLA rating as possible.
REPAIR - HIGH PRIORITY	RTU-1 economizer is not functional and is propped open by a magnet. Recommend repairing so that OA can be properly set.
CLEAN - LOW PRIORITY	Restroom exhaust fan EF 5 duct system is dirty and needs to be cleaned to restore system performance.

Notes/Comments:

NATIONAL TAB

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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	6125	5578	5175	4183	950	1395	15.5%	25.0%						
RTU-2	BAR DINING	6125	4582	5175	3632	950	950	15.5%	20.7%						
RTU-3	KITCHEN	6000	4556	5250	3528	750	1028	12.5%	22.6%						
MUA-1	HOOD 1, 2, 3									5088	5212				
EF-1	HOOD 1											1800	2107		
EF-2	HOOD 2											3160	2883		
EF-3	HOOD 3											1400	1251		
EF-4	DISH HOOD 4											900	961		
EF-5	RESTROOMS													600	501
TOTALS		18250	14716	15600	11343	2650	3373			5088	5212	7260	7202	600	501

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	7738	8585
TOTAL EXHAUST	7860	7703
NET AIRFLOW	-122	882

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H20)
FRONT	0.03
SIDE	0.04
REAR	n/a
AVERAGE	**0.035**

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:

Red Robin

Bartonsville, PA

RTU 1

RTU 2

RTU 3

EF 1

EF 1

EF 2

EF 3

EF 4

EF 5

MUA

Hood 1

Hood 2

Hood 3

RTU 1 Return

RTU 1 Return

RTU 2 Return

RTU 2 Return

RTU 3 Duct Drop

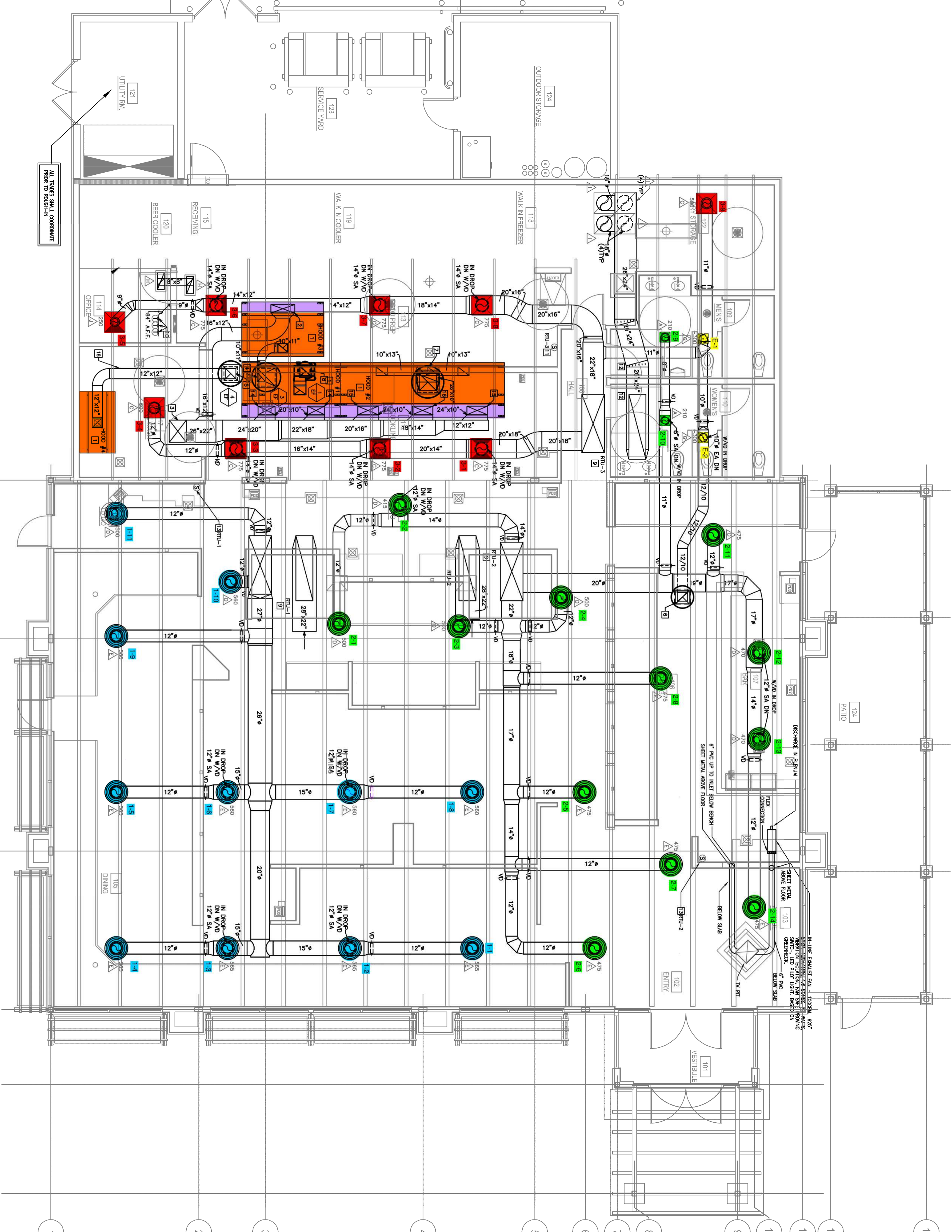
RTU 3 Return

RTU 3 Return

RTU 3 Return

RTU 1 OA Damper

Store Front



ALL TRADES SHALL COORDINATE PRIOR TO ROUGH-IN
UTILITY RM. 121
SERVICE YARD 123
OUTDOOR STORAGE 124
BEER COOLER 120
RECEIVING 115
WALK IN COOLER 119
WALK IN FREEZER 118
DRY STORAGE 122
OFFICE 114
MEN'S 109
WOMEN'S 110
HALL
HOOD #3B
HOOD #2
HOOD #4
RTU-1
RTU-2
RTU-3
DINING 105
BAR 107
PATIO 124
ENTRY 102
VESTIBULE 101
DISCHARGE IN PLENUM
6" PVC UP TO INLET BELOW BENCH
SHEET METAL ABOVE FLOOR
BELOW SLAB
FLEX CONNECTION
IN-LINE EXHAUST FAN - 100CFM, .625"
TV PIT
IN DROP DN W/VD 14"ø SA
IN DROP DN W/VD 12"ø SA
W/VD IN DROP
10"ø EA DN
E-1
E-2

TECH - STEP 1: INITIAL READINGS

Assigned Organization: National TAB

Status: Not Submitted

Asset:

INITIAL BUILDING REVIEW:	
What is the initial building pressure before making any changes?	0.01"
Are thermostats programmed?	Yes
Are building pressure relief working properly?	Not Tested
INITIAL AIRFLOWS:	
SUPPLY RTU-1	4702
OA RTU-1	1345
SUPPLY RTU-2	4582
OA RTU-2	1506
SUPPLY RTU-3	4556
OA RTU-3	2230
EF-1	2107
EF-2	2883
EF-3	1251
EF-4	961
EF-5	501
MAU-1	5212
INITIAL TEMPERATURE AND HUMIDITY (F°/%) READINGS LOCATIONS	
RTU 1 Temperature Sensor	71.8 47%
RTU 2 Temperature Sensor	72.5 45%
RTU 3 Temperature Sensor	68 54%
Do all temperatures at the sensor match what is shown on the thermostat?	RTU 1 70 RTU 2 70 RTU 3 72
Patio	72 46%
Above Ceiling in Kitchen (Make sure to replace ceiling tile so we are measuring the space above the ceiling and not the air coming into the ceiling)	75 45%

Notes/Comments:

TECH - STEP 2: INITIAL WALKTHROUGH

Assigned Organization: National TAB

Status: Not Submitted

Asset:

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?	

Notes/Comments:

TECH - STEP 3: UNIT DATA AND EVAL

Assigned Organization: National TAB

Status: Not Submitted

Asset:

UNIT DATA AND EVALUATION WHILE GATHERING UNIT DATA CHECK THE FOLLOWING:	
RTU's/AHU's	
Economizers are assembled and functional?	No
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?	See issues on individual RTU sheets
If direct drive unit is the speed controller working.	N/A
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?	Yes
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?	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?	Yes

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

TECH - STEP 4: TEST, ADJUST AND BALANCE

Assigned Organization: National TAB

Status: Not Submitted

Asset:

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".	N/A
TEST RTU COOLING STAGES	
Verify that the RTUs compressors are turning on for each stage of cooling.	Yes
Note any issues.	N/A

Notes/Comments:

The first and second stage compressors are jumpered together.

TECH - STEP 5: FINAL TESTS

Assigned Organization: National TAB

Status: Not Submitted

Asset:

FINAL TESTS	
HOOD CAPTURE TEST	
List equipment turned on for testing	ALL
List smoke candle type used	FOOD
Smoke test capture - Perimeter of hood	SEE NOTES
Smoke test capture - Top of cooking surface	SEE NOTES
WITNESS	
Date test was completed	5/8/2018
TAB tech name / Firm	MITCH KERR // NTAB
Site super name / Firm	NA
Owner representative name / Firm (if Applicable)	NA
Building pressure at front & back doors (All Systems On)	0.035" AVERAGE
ADDITIONAL	
Do actual net building airflow, design net building airflow, and pressure coincide? If not why? (All three should either be positive or negative)	DESIGN IS SLIGHTLY POSITIVE,

Notes/Comments:

Smoke test was not preformed. There were no adjsutments made to the hoods. There were no capture issues mentioned or observed wile the resturant was in operation.

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Project: RED ROBIN - BARTONSVILLE, PA (REVIVE)

System/Unit: AHU/RTU

Asset: RTU1 AREA: DINING

Unit Data		
	Design	**Actual**
MFG	TRANE	TRANE
Model Num	YFD211C3HA	YFD211C3HA
Serial Num	-	651100852D
Type	RTU	RTU
Configuration	VERTICAL DISCHARGE	VERTICAL DISCHARGE
Num OA Filters 1	-	1
OA Filter Size 1	-	17X60 7.08
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	-	56 HZ
Horsepower	5.0	5
Motor Rpm	-	3450
Phase	3	3
Rated Voltage	208	208-230/460
Rated Amperage	-	13.4-12.6/6.3

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	1VL40
Motor Bore Size	-	7/8
Motor Sheave SetPt	-	4.0 MAXIMIZED
Fan Sheave Size	-	BK160
Fan Sheave Bore	-	1 3/16
Belt CL Distance	-	22
Num of Belts	-	1
Belt Size	-	BX75
Belt Alignment	-	YES

Test Data		
	Design	**Actual**
SF CFM	6125	5578
SF RPM	-	834
RA CFM	5175	4183
OA CFM	950	1395
RL Voltage	-	211/211/211
RL Amperage	-	11.3/11.0/11.6
SF Rotation	-	CCW
RA Damper Position	-	80
Min OA Damper Position	-	20
Min OA Damper Type	-	ECONOMIZING HORIZONTAL BLADE
Brake Horse Power	-	4.22

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.68
Fan Suction SP	-	-0.85
Fan Discharge SP	-	0.18
Total ESP	.75"	0.86
Fan Total SP	-	1.03

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

Completed By: Mitch Kerr on 05/08/2018

Notes: Starting RPM: 703 4702 cfm
Starting OA: 1345
Motor RPM: 3501
OA Damper is not working it was found with a magnet used as a shim to hold the damper open.

Diffuser Supply (GRD)

RTU1 / DINING

Asset	Area Served	Type	Size	DESIGN CFM	AK	CFM(1)	FINAL CFM	% to design
SGRD1	DINING	E	12"	565	1.42	236	335	59.3
SGRD2	DINING	E	12"	565	1.42	223	317	56.1
SGRD3	DINING	E	12"	565	1.42	212	301	53.3
SGRD4	DINING	E	12"	565	1.42	282	400	70.8
SGRD5	DINING	E	12"	565	1.42	441	626	110.8
SGRD6	DINING	E	12"	560	1.42	182	258	46.1
SGRD7	DINING	E	12"	560	1.42	306	435	77.7
SGRD8	DINING	E	12"	560	1.42	280	398	71.1
SGRD9	DINING	D	12"	560	1.42	406	577	103.0
SGRD10	DINING	D	12"	560	1	557	557	99.5
SGRD11	TO-GO	D	12"	500	1	498	498	99.6

Completed By: Wendy Biggs on

Asset	Area Served	Notes

Asset: RTU2 AREA: BAR DINING

Unit Data

	Design	Actual
MFG	TRANE	TRANE
Model Num	YFD211C3HA	YFD211C3HA
Serial Num	-	651100818D
Type	RTU	RTU
Configuration	VERTICAL DISCHARGE	VERTICAL DISCHARGE
Num OA Filters 1	-	1
OA Filter Size 1	-	59X17 6.97
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	-	56 HZ
Horsepower	5.0	5
Motor Rpm	-	3450
Phase	3	3
Rated Voltage	208	208-230/460
Rated Amperage	-	13.4-12.6/6.3

Drive Data

	Design	Actual
Motor Sheave Size	-	3 1/2
Motor Bore Size	-	7/8
Motor Sheave SetPt	-	3.5 MAXIMIZED
Fan Sheave Size	-	BK160
Fan Sheave Bore	-	1 5/16
Belt CL Distance	-	22 1/8
Num of Belts	-	1
Belt Size	-	B75
Belt Alignment	-	GOOD

Completed By: Mitch Kerr on 05/08/2018

Notes: Starting RPM: 598
Starting OA: 1506
Damaged tension pulley
Motor RPM 2909 see issues list for details.

Test Data

	Design	Actual
SF CFM	6125	4582
SF RPM	-	598
RA CFM	5175	3632
OA CFM	950	950
RL Voltage	-	212/213/214
RL Amperage	-	6.8/7.2/7.1
SF Rotation	-	CCW
RA Damper Position	-	75
Min OA Damper Position	-	25
Min OA Damper Type	-	ECONOMIZING HORIZONTAL BLADE
Brake Horse Power	-	2.62

Performance Data

	Design	Actual
MA Plenum SP	-	-0.40
Fan Suction SP	-	-0.53
Fan Discharge SP	-	0.04
Total ESP	.75"	0.44
Fan Total SP	-	0.57

General

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

Diffuser Supply (GRD)

RTU2 / BAR DINING

Asset	Area Served	Type	Size	DESIGN CFM	AK	CFM(1)	FINAL CFM	% to design
SGRD1	DINING	D	12"	500	1	413	413	82.6
SGRD2	DINING	D	12"	415	1	427	427	102.9
SGRD3	DINING	D	12"	500	1	390	390	78.0
SGRD4	DINING	D	12"	500	1	385	385	77.0
SGRD5	DINING	E	12"	475	1.42	226	321	67.6
SGRD6	DINING	E	12"	475	1.42	220	312	65.7
SGRD7	DINING	E	12"	475	1.42	211	300	63.2
SGRD8	DINING	E	12"	475	1.42	206	293	61.7
SGRD9	MENS RR	A	8"	210	1	148	148	70.5
SGRD10	WOMENS RR	A	8"	210	1	180	180	85.7
SGRD11	BAR	D	12"	475	1	250	250	52.6
SGRD12	BAR	D	12"	470	1	286	286	60.9
SGRD13	BAR	D	12"	470	1	241	241	51.3
SGRD14	ARCADE	E	12"	475	1.42	448	636	133.9

Completed By: Wendy Biggs on

Asset	Area Served	Notes

Asset: RTU3 AREA: KITCHEN

Unit Data

	Design	Actual
MFG	TRANE	TRANE
Model Num	YFD181C3LA	YFD181C3LA
Serial Num	-	651100807D
Type	RTU	RTU
Configuration	VERTICAL DISCHARGE	VERTICAL DISCHARGE
Num OA Filters 1	-	1
OA Filter Size 1	-	59.25X17 6.99
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	-	GE
Frame	-	56 HZ
Horsepower	3.0	3
Motor Rpm	-	1725
Phase	3	3
Rated Voltage	208	208-230/460
Rated Amperage	-	9.4-9.2/4.6

Drive Data

	Design	Actual
Motor Sheave Size	-	3 1/2
Motor Bore Size	-	7/8
Motor Sheave SetPt	-	3.5 MAXIMIZED
Fan Sheave Size	-	BK90
Fan Sheave Bore	-	1 3/16
Belt CL Distance	-	22
Num of Belts	-	1
Belt Size	-	BX64
Belt Alignment	-	YES

Test Data

	Design	Actual
SF CFM	6000	4556
SF RPM	-	713
RA CFM	5250	3528
OA CFM	750	1028
RL Voltage	-	213/214/214
RL Amperage	-	7.1/7.2/7.6
SF Rotation	-	CCW
RA Damper Position	-	97
Min OA Damper Position	-	3
Min OA Damper Type	-	ECONOMIZING HORIZONTAL BLADE
Brake Horse Power	-	2.33

Performance Data

	Design	Actual
MA Plenum SP	-	-0.62
Fan Suction SP	-	-0.71
Fan Discharge SP	-	0.31
Total ESP	.75"	0.93
Fan Total SP	-	1.02

General

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

Completed By: Mitch Kerr on 05/08/2018

Notes: Starting RPM: 713
Sheave is maximized and frozen with rust
Starting OA: 2230 CFM
Motor RPM: 1729
OA Damper is closed as far as the actuator will allow without closing to 0%.

Diffuser Supply (GRD)

RTU3 / KITCHEN

Asset	Area Served	Type	Size	DESIGN CFM	AK	CFM(1)	FINAL CFM	% to design
SGRD1	COOKLINE	C	14"	775	1	500	500	64.5
SGRD2	COOKLINE	C	14"	775	1	661	661	85.3
SGRD3	COOKLINE	C	14"	775	1	600	600	77.4
SGRD4	DISHWASH	C	12"	600	1	517	517	86.2
SGRD5	OFFICE	J	9"	250	1	202	202	80.8
SGRD6	PREP	C	14"	775	1	633	633	81.7
SGRD7	PREP	C	14"	775	1	558	558	72.0
SGRD8	PREP	C	14"	775	1	572	572	73.8
SGRD9	DRY STORAGE	C	11"	500	1	313	313	62.6

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Asset	Area Served	Notes

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Project: RED ROBIN - BARTONSVILLE, PA (REVIVE)

System/Unit: FAN - Supply

Asset: MAU1 AREA: HOOD 1, 2, 3

Unit Data		
	Design	**Actual**
MFG	CAPTIVE-AIRE	CAPTIVE-AIRE
Model Num	NUMUA3-18"-G18	A2-D.500-G15
Serial Num	-	533909
Type	MUA	MUA
Configuration	VERTICAL DISCHARGE	VERTICAL DISCHARGE

Motor Data		
	Design	**Actual**
Motor MFG	-	WEG
Frame	-	184T
Horsepower	3.0	5
Motor Rpm	-	1735
Phase	3	3
Voltage (rated)	208	208-230/460
Amperage (rated)	-	14.1-12.8/6.38
Service Factor	-	1.15 1.0 @ 208 VOLTS

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	2VP42
Motor Bore Size	-	1 1/8
Fan Sheave Size	-	6 3/4
Fan Sheave Bore	-	1
Belt CL Distance	-	19
Num of Belts	-	2
Belt Size	-	B52
Belt Alignment Verified	-	YES

Gas Heat		
	Design	**Actual**
Heater Operates (y/n)	-	YES
Flame Status (pass/fail)	-	PASS
Inlet Air Temp SetPt	55	55
Discharge Air Temp SetPt	60	60
Air Flow Switch SP Actual	-	NO ACCESS

Test Data		
	Design	**Actual**
CFM	5088	5212
SF RPM	658	1006
Motor RPM	-	1769
RL Voltage	-	212/211/212
RL Amperage	-	7.7/7.6/7.6
Total ESP	.50"	NO ACCESS
Fan Discharge SP	-	NO ACCESS

General		
	Design	**Actual**
Fan Rotation Correct	-	YES

Completed By: Mitch Kerr on 05/08/2018

Notes: Sheave is frozen with rust.

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Project: RED ROBIN - BARTONSVILLE, PA (REVIVE)

System/Unit: FAN - Exhaust

Asset: EF1 AREA: HOOD 1

Unit Data		
	Design	**Actual**
MFG	CAPTIVE-AIRE	CAPTIVE-AIRE
Model Num	HRE-13	HRE-13
Serial Num	-	NOT LEGIBLE
Type	CENTRIFUGAL	CENTRIFUGAL
Configuration	UTILITY	UTILITY

Motor Data		
	Design	**Actual**
Motor MFG	-	WEG
Frame	-	56H
Horsepower	1.0	1
Motor Rpm	-	1760
Phase	3	3
Voltage (rated)	208	208-230/460
Amperage (rated)	-	3.47-3.14/1.57
Service Factor	-	1.0

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	1VL40
Motor Bore Size	-	5/8
Motor Sheave SetPt	-	-
Fan Sheave Size	-	5 1/4
Fan Sheave Bore	-	1
Belt CL Distance	-	26 7/8
Num of Belts	-	1
Belt Size	-	A65

Test Data		
	Design	**Actual**
CFM	1800	2107
Fan RPM	1733	1073
Fan Rotation	-	CCW
Motor RPM	-	1758
RL Voltage	-	211/212/211
RL Amperage	-	3.7/3.6/3.6
Suction ESP	-	NO ACCESS
Discharge ESP	-	ATM
Total ESP	1.00"	NO ACCESS
Brake Horse Power	-	1.04

Completed By: Mitch Kerr on 05/08/2018

Notes:

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Project: RED ROBIN - BARTONSVILLE, PA (REVIVE)

System/Unit: FAN - Exhaust

Asset: EF2 AREA: HOOD 2

Unit Data		
	Design	**Actual**
MFG	CAPTIVE-AIRE	CAPTIVE-AIRE
Model Num	NCA18HPFA	NCA18HPFA
Serial Num	-	NOT LEGIBLE
Type	CENTRIFUGAL	CENTRIFUGAL
Configuration	UPBLAST	UPBLAST

Motor Data		
	Design	**Actual**
Motor MFG	-	WEG
Frame	-	NOT LEGIBLE
Horsepower	1.50	NOT LEGIBLE
Motor Rpm	-	NOT LEGIBLE
Phase	3	NOT LEGIBLE
Voltage (rated)	208	NOT LEGIBLE
Amperage (rated)	-	NOT LEGIBLE
Service Factor	-	NOT LEGIBLE

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	1VL40
Motor Bore Size	-	5/8
Motor Sheave SetPt	-	-
Fan Sheave Size	-	4 1/2
Fan Sheave Bore	-	3/4
Belt CL Distance	-	6 3/4
Num of Belts	-	1
Belt Size	-	A23

Test Data		
	Design	**Actual**
CFM	3160	2883
Fan RPM	1140	1185
Fan Rotation	-	CCW
Motor RPM	-	1718
RL Voltage	-	212/212/211
RL Amperage	-	2.7/2.6/2.6
Suction ESP	-	-1.00
Discharge ESP	-	ATM
Total ESP	1.25"	1.00
Brake Horse Power	-	SEE NOTES

Completed By: Mitch Kerr on 05/08/2018

Notes: insuffecent data to calculate BHP.

National TAB

Project: RED ROBIN - BARTONSVILLE, PA (REVIVE)

System/Unit: FAN - Exhaust

Asset: EF3 AREA: HOOD 3

Unit Data		
	Design	**Actual**
MFG	CAPTIVE-AIRE	CAPTIVE-AIRE
Model Num	NCA14FA	NCA14FA
Serial Num	-	NOT LEGIBLE
Type	CENTRIFUGAL	CENTRIFUGAL
Configuration	UPBLAST	UPBLAST

Motor Data		
	Design	**Actual**
Motor MFG	-	DAYTON
Frame	-	48YZ
Horsepower	.50	1/2
Motor Rpm	-	1625
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	8.2
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

Test Data		
	Design	**Actual**
CFM	1400	1251
Fan RPM	984	DIRECT DRIVE
Fan Rotation	-	CCW
Motor RPM	-	DIRECT DRIVE
RL Voltage	-	122
RL Amperage	-	4.6
Suction ESP	-	-0.78
Discharge ESP	-	ATM
Total ESP	.75"	0.78
Brake Horse Power	-	0.28

Completed By: Mitch Kerr on 05/08/2018

Notes:

National TAB

Project: RED ROBIN - BARTONSVILLE, PA (REVIVE)

System/Unit: FAN - Exhaust

Asset: EF4 AREA: DISHWARE HOOD 4

Unit Data		
	Design	**Actual**
MFG	CAPTIVE-AIRE	CAPTIVE-AIRE
Model Num	DR50HFA	DR50HFA
Serial Num	-	3034891
Type	CENTRIFUGAL	CENTRIFUGAL
Configuration	DOWNBLAST	DOWNBLAST

Motor Data		
	Design	**Actual**
Motor MFG	-	HSSA
Frame	-	48Y
Horsepower	.50	1/3
Motor Rpm	-	1625
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	3.8
Service Factor	-	1.0

Test Data		
	Design	**Actual**
CFM	900	961
Fan RPM	1150	DIRECT DRIVE
Fan Rotation	-	CCW
Motor RPM	-	DIRECT DRIVE
System SetPt	-	MEDIUM
RL Voltage	-	123
RL Amperage	-	2.2
Total ESP	.75"	0.54
Fan Inlet SP	-	-0.54
Fan Discharge SP	-	ATM

Completed By: Mitch Kerr on 05/08/2018

Notes:

National TAB

Project: RED ROBIN - BARTONSVILLE, PA (REVIVE)

System/Unit: FAN - Exhaust

Asset: EF5 AREA: RESTROOMS

Unit Data		
	Design	**Actual**
MFG	CAPTIVE-AIRE	CAPTIVE-AIRE
Model Num	DR30HFA	DR30HFA
Serial Num	-	NOT LEGIBLE
Type	CENTRIFUGAL	CENTRFUGAL
Configuration	DOWNBLAST	DOWNBLAST

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	48Y
Horsepower	.25	1/4
Motor Rpm	-	1725
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	2.8
Service Factor	-	1

Test Data		
	Design	**Actual**
CFM	600	501
Fan RPM	1217	DIRECT DRIVE
Fan Rotation	-	CCW
Motor RPM	-	DIRECT DRIVE
System SetPt	-	MEDIUM
RL Voltage	-	122
RL Amperage	-	3.9
Total ESP	.62"	0.98
Fan Inlet SP	-	-0.98
Fan Discharge SP	-	ATM

Completed By: Mitch Kerr on 05/08/2018

Notes: Duct system is dirty and needs to be cleaned to restore system preformance.

Diffuser Ret/Exh (GRD)

EF5 / RESTROOMS

Asset	Area Served	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
EGRD1	MENS RR	G	10"	300	213	213	71.0
EGRD2	WOMENS RR	G	10"	300	288	288	96.0

Completed By: Wendy Biggs on

Asset	Area Served	Notes

National TAB

Project: RED ROBIN - BARTONSVILLE, PA (REVIVE)

System/Unit: Kitchen Hood Type I

Asset: HD1 AREA: HOOD 1

Unit Data		
	Design	**Actual**
MFG	CAPTIVE-AIRE	CAPTIVE-AIRE
Model Num	4524 ND-PSP-F	4524 ND-PSP-F
Job / Serial Num	-	NOT LEGIBLE
Type	TYPE I CANOPY	TYPE 1 CANOPY
Hood length	96	96
Hood Width	45	48
Supply Plenum Type	PSP	PSP
Supply Plenum Width	-	12
Supply Plenum Length	-	114

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	BAFFLED
Filter Size 1	-	20X16
Filter Size 2	-	16X16
Filter Qty 1	-	4
Filter Qty 2	-	1
Filter AK factor size 1	-	2.08
Filters AK factor size 2	-	1.62
Filter Total AK Area	-	9.94
Filter1 FPM	-	214
Filter2 FPM	-	207
Filter3 FPM	-	244
Filter4 FPM	-	223
Filter5 FPM	-	174
Filter6 FPM	-	-
Filter7 FPM	-	-
Filter8 FPM	-	-
Filter9 FPM	-	-
Filter10 FPM	-	-
Filter Ave FPM(corr)	-	212
CFM	1800	2107

Cooking Equipment		
	Design	**Actual**
Item 1	-	BURGER COOKER
Item 2	-	CHAR BROILER
Item 3	-	-

Completed By: Mitch Kerr on 05/08/2018

Notes:

Test Data Supply		
	Design	**Actual**
AK factor	1	1
Total AK Area	-	9.5
Kv factor (Vel)	-	0.87
Num of Readings	-	9
Reading1 FPM	-	216
Reading2 FPM	-	165
Reading3 FPM	-	167
Reading4 FPM	-	222
Reading5 FPM	-	224
Reading6 FPM	-	206
Reading7 FPM	-	163
Reading8 FPM	-	187
Reading9 FPM	-	218
Reading10 FPM	-	-
Reading11 FPM	-	-
Reading12 FPM	-	-
Reading13 FPM	-	-
Reading14 FPM	-	-
Ave FPM(corr)	-	196
CFM	1440	1620

Performance Data		
	Design	**Actual**
Exh-Supply Net CFM	360	487
Smoke Generation Type	-	45 SECOND
Cooking Equip Heat On	-	YES
Hood Capture %	-	100
End Panels Installed (Y/N)	-	NO

National TAB

Project: RED ROBIN - BARTONSVILLE, PA (REVIVE)

System/Unit: Kitchen Hood Type I

Asset: HD2 AREA: HOOD 2

Unit Data		
	Design	**Actual**
MFG	CAPTIVE-AIRE	CAPTIVE-AIRE
Model Num	4524 ND-PSP-F	4524 ND-PSP-F
Job / Serial Num	-	NOT LEGIBLE
Type	TYPE I CANOPY	TYPE 1 CANOPY
Hood length	192	192
Hood Width	45	48
Supply Plenum Type	PSP	PSP
Supply Plenum Width	-	12
Supply Plenum Length	-	192

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	BAFFLED
Filter Size 1	-	20X16
Filter Size 2	-	16X16
Filter Qty 1	-	8
Filter Qty 2	-	2
Filter AK factor size 1	-	2.08
Filters AK factor size 2	-	1.62
Filter Total AK Area	-	19.88
Filter1 FPM	-	143
Filter2 FPM	-	136
Filter3 FPM	-	147
Filter4 FPM	-	143
Filter5 FPM	-	105
Filter6 FPM	-	173
Filter7 FPM	-	162
Filter8 FPM	-	159
Filter9 FPM	-	162
Filter10 FPM	-	121
Filter Ave FPM(corr)	-	145
CFM	3160	2883

Cooking Equipment		
	Design	**Actual**
Item 1	-	GRIDDLE
Item 2	-	RANGE
Item 3	-	FRYERS

Completed By: Mitch Kerr on 05/08/2018

Notes:

Test Data Supply		
	Design	**Actual**
AK factor	1	1
Total AK Area	-	16
Kv factor (Vel)	-	0.87
Num of Readings	-	14
Reading1 FPM	-	49
Reading2 FPM	-	62
Reading3 FPM	-	143
Reading4 FPM	-	156
Reading5 FPM	-	201
Reading6 FPM	-	252
Reading7 FPM	-	257
Reading8 FPM	-	195
Reading9 FPM	-	225
Reading10 FPM	-	259
Reading11 FPM	-	240
Reading12 FPM	-	221
Reading13 FPM	-	203
Reading14 FPM	-	252
Ave FPM(corr)	-	193
CFM	2528	2687

Performance Data		
	Design	**Actual**
Exh-Supply Net CFM	632	196
Smoke Generation Type	-	45 SECOND
Cooking Equip Heat On	-	YES
Hood Capture %	-	100
End Panels Installed (Y/N)	-	YES

National TAB

Project: RED ROBIN - BARTONSVILLE, PA (REVIVE)

System/Unit: Kitchen Hood Type I

Asset: HD3 AREA: HOOD 3

Unit Data		
	Design	**Actual**
MFG	CAPTIVE-AIRE	CAPTIVE-AIRE
Model Num	4524 ND-PSP-F	4524 ND-PSP-F
Job / Serial Num	-	NOT LEGIBLE
Type	TYPE I CANOPY	TYPE 1 CANOPY
Hood length	96	96
Hood Width	45	48
Supply Plenum Type	PSP	PSP
Supply Plenum Width	-	12
Supply Plenum Length	-	96

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	BAFFLED
Filter Size 1	-	20X20
Filter Size 2	-	20X16
Filter Qty 1	-	3
Filter Qty 2	-	2
Filter AK factor size 1	-	2.08
Filters AK factor size 2	-	1.62
Filter Total AK Area	-	9.48
Filter1 FPM	-	130
Filter2 FPM	-	121
Filter3 FPM	-	134
Filter4 FPM	-	152
Filter5 FPM	-	126
Filter6 FPM	-	-
Filter7 FPM	-	-
Filter8 FPM	-	-
Filter9 FPM	-	-
Filter10 FPM	-	-
Filter Ave FPM(corr)	-	132
CFM	1400	1251

Cooking Equipment		
	Design	**Actual**
Item 1	-	6 BURNER RANGE
Item 2	-	-
Item 3	-	-

Completed By: Mitch Kerr on 05/08/2018

Notes:

Test Data Supply		
	Design	**Actual**
AK factor	1	1
Total AK Area	-	8
Kv factor (Vel)	-	0.87
Num of Readings	-	7
Reading1 FPM	-	117
Reading2 FPM	-	158
Reading3 FPM	-	150
Reading4 FPM	-	148
Reading5 FPM	-	96
Reading6 FPM	-	113
Reading7 FPM	-	129
Reading8 FPM	-	-
Reading9 FPM	-	-
Reading10 FPM	-	-
Reading11 FPM	-	-
Reading12 FPM	-	-
Reading13 FPM	-	-
Reading14 FPM	-	-
Ave FPM(corr)	-	130
CFM	1120	905

Performance Data		
	Design	**Actual**
Exh-Supply Net CFM	280	346
Smoke Generation Type	-	45 SECOND
Cooking Equip Heat On	-	YES
Hood Capture %	-	100
End Panels Installed (Y/N)	-	NO

System/Unit: Kitchen Hood Type II

Asset: HD4 AREA: DISHWARE HOOD 4

Unit Data		
	Design	**Actual**
MFG	CAPTIVE-AIRE	CAPTIVE AIRE
Model Num	4224VH1-G	4224VH1-G
Serial Num	-	NOT LISTED
Type	TYPE II CANOPY	TYPE II CANOPY
Hood length	72	84
Hood Width	42	42

Test Data		
	Design	**Actual**
Exhaust CFM	900	961

Completed By: Mitch Kerr on 05/07/2018

Notes:

Round Duct Traverse Report

System: RTU1 (TRANE-YFD211C3HA-DINING)

Service: SGRD1 (NA-NA-DINING); SGRD2 (NA-NA-DINING); SGRD3 (NA-NA-DINING); SGRD4 (NA-NA-DINING); SGRD5 (NA-NA-DINING); SGRD6 (NA-NA-DINING); SGRD7 (NA-NA-DINING); SGRD8 (NA-NA-DINING)

Altitude: Density: Factor:

Duct		Design	Actual
Diameter: 26	Readings: 10	SCFM:	SCFM:
Area: 3.69		FPM: 1220	FPM: 988
S.P.:	Temp:	CFM: 4505	CFM: 3643

Notes:

This traverse is used to devlop a K for the open dining room diffsuers. Total Velocity: 2568 K=1.42

Duct Traverse Data Points