Report By:

National TAB
1329 E. KEMPER ROAD
SUITE 4210
CINCINNATI, OH 45246

NATIONAL TAB

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Report: TAB REPORT
Function: Test, Adjust, & Balance
Date: 06/08/2023

PROJECT

05-29-23 CULVERS - APPLETON, WI

3631 E CALUMET ST

APPLETON, WI 54915

Client

Accurex

PO Box 410

Schofield, WI 54476

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Issue List

- INFO ONLY: Unused Duct Laying in Ceiling Space
- MAU Cookline Diffuser Locations
- PRV-1 (customer RR) Rotation Incorrect
- PRV-5 Mechanical Room Exhaust
- RESOLVED: RTU-3 (dining) Condensate Drain Not installed
- RTU OA filters installed backwards.
- RTU-3 Diffuser Duct pinched, no airflow.

CheckList List

- TECH - SITE PICTURES
- TECH - STEP 1: INITIAL WALKTHROUGH
- TECH - STEP 2: UNIT DATA AND EVAL
- TECH - STEP 3: TEST, ADJUST AND BALANCE
- TECH - STEP 4: FINAL TESTS

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05-29-23 CULVERS - APPLETON, WI

Project Issue Information

Issue Name : INFO ONLY: Unused Duct Laying in Ceiling Space

Description : Several deleted/ unused ducts were found laying in the ceiling space, specifically above the serving/drive-thru area. Recommend these are removed.

Created By : National TAB

Assigned To : National TAB - Michael McDonnell

Status : Open

Originated Date : 06/07/2023 - Michael McDonnell - National TAB

Project Issue File Details

Deletedduct
06/07/2023

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05-29-23 CULVERS - APPLETON, WI

Project Issue Information

Issue Name : MAU Cookline Diffuser Locations

Description : The MAU serves 4 diffusers along the cookline that are positioned directly above the hood cooking surface. This is disrupting hood capture and cooling the griddle cooking surface in the summer. Typically these diffusers are positioned further back from the hoods to avoid hood disruption.

Created By : National TAB

Assigned To : National TAB - Michael McDonnell

Status : Open

Originated Date : 06/07/2023 - Michael McDonnell - National TAB

Project Issue File Details

Diffuserlocations.jpe..
06/07/2023

Directlyabovegriddle...
06/07/2023

Project Issue Response Details

- **06/07/2023 National TAB - Michael McDonnell**
  - Diffuser directly above griddle dampened closed, hood capture significantly improved.

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05-29-23 CULVERS - APPLETON, WI

Project Issue Information

Issue Name : PRV-1 (customer RR) Rotation Incorrect

Description : PRV-1 was initially found off, with a broken belt. Belt was replaced but fan is rotating the incorrect direction. Instructions for correcting rotation are on motor label. Recommend this is corrected.

Created By : National TAB

Assigned To : National TAB - Michael McDonnell

Status : Open

Originated Date : 06/07/2023 - Michael McDonnell - National TAB

Project Issue File Details

1. Open Rotationincorrect.MOV
   06/07/2023

Brokenbelt
06/07/2023

Beltreplaced
06/07/2023

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05-29-23 CULVERS - APPLETON, WI

Project Issue Information

Issue Name : PRV-5 Mechanical Room Exhaust

Description : PRV-5 serves the back mechanical room where the walk-in cooler is located. The fan is activated by temperature setpoint and when activated, powers on and opens a relief louvre in the mechanical room. Recommend the door to the mechanical room is kept closed so PRV-5 operation doesn't impact store balance and pulls exhaust from the louvre and not the store.

Created By : National TAB

Assigned To : National TAB - Michael McDonnell

Status : Open

Originated Date : 06/07/2023 - Michael McDonnell - National TAB

Project Issue File Details

PRV-5
06/07/2023

Louvre
06/07/2023

Keepclosed
06/07/2023

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05-29-23 CULVERS - APPLETON, WI

Project Issue Information

Issue Name : RESOLVED: RTU-3 (dining) Condensate Drain Not installed

Description : RTU-3 did not have a condensate drain installed on arrival. Drain was found laying on roof and reattached. Recommend drain is secured.

Created By : National TAB

Assigned To : National TAB - Michael McDonnell

Status : Open

Originated Date : 06/07/2023 - Michael McDonnell - National TAB

Project Issue File Details

Missing
06/07/2023

Reattached
06/07/2023

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05-29-23 CULVERS - APPLETON, WI

Project Issue Information

Issue Name : RTU OA filters installed backwards.

Description : OA filters are installed backwards in the units. Metal support grate should be on the inside of the filter.

Created By : National TAB

Assigned To : National TAB - Michael McDonnell

Status : Open

Originated Date : 06/07/2023 - Michael McDonnell - National TAB

Project Issue File Details

OAfilter
06/07/2023

Backwards
06/07/2023

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05-29-23 CULVERS - APPLETON, WI

Project Issue Information

Issue Name : RTU-3 Diffuser Duct pinched, no airflow.

Description : An RTU-3 diffuser to the right of the serving counter (when facing menu) has its duct pinched due to disconnected hard duct wrapped in flex. The diffuser has no airflow. Recommend the pinched duct is resolved.

Created By : National TAB

Assigned To : National TAB - Michael McDonnell

Status : Open

Originated Date : 06/07/2023 - Michael McDonnell - National TAB

Project Issue File Details

Ductpinched
06/07/2023

Location
06/07/2023

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SUMMARY

The purpose of this visit was to balance two new exhaust hoods and gain an understanding of the Restaurants HVAC system to inspect known & unknown issues that can be evaluated by the team for possible improvement. NTAB adjusted or made modifications to any asset during the visit that created immediate improvements toward a properly balanced restaurant. Please note the issues described below, as well as listed throughout the report.

This is an older Culvers location and has had some changes made to its HVAC system over the years. On arrival, the store building pressure was significantly negative (measured at -0.0287" W.C.). Tolerance for building pressure is +/- 0.02" W.C.. We evaluated each asset of the HVAC system to identify any means to correct this unbalanced condition.

Exhaust Hoods

Two new low profile exhaust hoods and their respective fans were installed at this store. Both hoods are designed for 1500 cubic feet/min (cfm) and were found to be exhausting significantly higher airflow than design (HD-1: 1836 cfm / HD-2: 1951 cfm). This high airflow was contributing to the stores' negative pressure. Both fans were slowed to within the design airflow (10% of design). Hood smoke capture was found to be 100% with the MAU off but was significantly impacted when the MAU was operating due to the MAU supply diffuser's location directly above cooking equipment. As described below, MAU diffusers were adjusted to improve hood capture.

MAU

The store has a make-up-air unit (MAU) that is conditioned (provides both heating and cooling) and serves 4 diffusers located along the cookline. These diffusers are positioned directly above the cooking equipment. Typically, the cookline diffusers are installed further back from the hoods to condition the air but not disrupt hood capture. This is also why perforated grilles and 2' straight necks are usually used on these diffusers (so air blows straight down and not at the hood). These diffusers are perforated but do not have the straight necks installed. As installed, the MAU diffusers were significantly impacting hood capture, specifically on the griddle. Because the MAU provides a significant portion of the kitchen supply airflow, we did not want to turn it off or slow it down. The diffusers directly above the cooking equipment were dampened down, with the diffuser above the griddle closed significantly. This slightly lowered the total MAU supply airflow, but greatly improved hood capture.

RTUs

This store has three Lennox rooftop units and all three have humidity control. The sensor wiring was verified. Typically, RTU supply airflow should fall between 350-400 cfm per ton for unit performance and efficiency.

RTU-1: RTU-1 is a 5-ton direct drive unit that serves the Kitchen and BOH. Supply airflow was initially measured at 1547 cfm. Two kitchen diffusers were found dampened shut, these were opened. The fan speed was increased, and total airflow was measured at 1927 cfm. The outside air damper was initially found set to 10% but was opened to 14% (308 cfm) in order to set a 15% ratio of OA to Supply airflow and bring building pressure positive.

RTU-2: RTU-2 is a 10-ton belt driven unit that serves six diffusers located in the serving counter area / drive-thru, and one diffuser on the cookline. Its airflow was measured at 3395 cfm and the motor is operating just below full load amperage (FLA), fan speed cannot be increased. This airflow is slightly below design. Its OA damper was initially found shut but was opened and set to a 20% OA to supply ratio to relieve negative building pressure. The

supply drop for this unit is in the middle of the kitchen but the unit serves diffusers at the customer serving counter, creating long duct runs. The return static pressure for the unit was slightly high and the unit is served by two 16" round returns. The dampers on these returns were verified open. Adding an additional return may relieve return pressure and increase supply airflow. Recommend consulting National Tab if any changes to the ductwork are made to improve supply airflow.

RTU-3: RTU-3 serves the Dining area and was initially measured at 4635 cfm. The motor was found overamping and was slowed to bring the motor below FLA. This put the total supply airflow at 4239 cfm. The OA damper was initially found shut and was opened to provide a 20% ratio of OA to supply airflow. The OA damper needed to be set to 47% in the prodigy board to open 1," suggesting it is not calibrated properly. The damper was recalibrated and responded correctly, but still does not seem to be opening to the proper position based on percentage. Regardless, the proper position was marked on the actuator with permanent marker and the damper is opening to the correct position.

Exhaust Fans

EF-1: EF-1 is a small ceiling fan located in the front mop closet. The fan was found to be operational.

PRV-1: PRV-1 serves the customer restrooms and was not operating on arrival. The belt was found damaged and the electrical disconnect turned off. A new belt was installed, and the fan runs but is spinning in the incorrect direction. Recommend rotation is corrected and the fan powered on. The building was balanced positive enough that once the fan is operational, it should not have a significant impact on the net pressure.

PRV-2 and PRV-3: These fans serve HD-1 and HD-2 respectively. They are installed properly, and airflow is at design. There is some significant grease staining surrounding PRV-2 but we assume this was caused by the previous fan as the new fan appears clean and the grease drain/trap is properly installed.

PRV-4: This fan serves the employee restroom and mechanical closet. It is a small direct drive fan and is exhausting a total of 82 cfm.

PRV-5: This fan serves the back mechanical room where the walk-in cooler is located. It operates based on a thermostat and activates when the room reaches a certain temperature. When the fan is activated, a louvre in the room opens to bring fresh air into the space and reduce the temperature. Once the thermostat is satisfied, the fan turns off and the louvre closes. When PRV-5 is operational, most often on warmer days, it pulls from the store space and causes the store to go negative. We recommend that the door to this room is kept shut so that when PRV-5 is activated, it only pulls from the louvre and not the store. This will prevent already treated air from being exhausted and prevent the store from becoming negatively pressurized and pulling untreated air into the store space.

Conclusion

The building's net pressure has drastically improved as a result of the balance. Reducing the hood exhaust airflow to design and bringing in the proper amount of outside air through the RTUs has brought the building from a severely negative state to a positive pressure of 0.007" W.C.. Changes to RTU airflow on RTU-1 and RTU-3 should also improve their performance and efficiency. We recommend the issues described and listed above are addressed to further improve the store's HVAC system.

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	KITCHEN	2000	1927	1700	1619	300	308	15.0%	16.0%						
RTU-2	SERVING	3500	3395	2800	2651	700	744	20.0%	21.9%						
RTU-3	DINING	4000	4239	3200	3374	800	865	20.0%	20.4%						
EF-1	MOP SINK													75	46
PRV-1	RESTROOMS													300	0
PRV-4	RESTROOMS													100	82
MAU	COOKLINE									1800	1799				
PRV2	GRIDDLE HD-1											1500	1506		
PRV3	FRYER HD-2											1500	1622		
TOTALS		9500	9561	7700	7644	1800	1917			1800	1799	3000	3128	475	128

NET BUILDING AIRFLOW CALCULATION

TOTALS		ACTUAL
TOTAL OA	3600	3716
TOTAL EXHAUST	3475	3256
NET AIRFLOW	125	460

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H20)
FRONT	0.008"
SIDE	0.008"
REAR	0.006"
AVERAGE	**0.0073**

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:

[1] Once PRV-1 is operational, building net airflow should still be near +160cfm.

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05-29-23 CULVERS - APPLETON, WI

CheckList Information

Name :	TECH - SITE PICTURES	**Status :**	Not Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

STORE FRONT

Appleton-WI
06/07/2023

RTU-1	Kitchen

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RTU_1
06/07/2023

PRODIGY
06/07/2023

Unitlabel
06/07/2023

RTU-2 Serving

RTU-2(1)
06/07/2023

Unitlabel
06/07/2023

Prodigy
06/07/2023

RTU-3 Dining

RTU-3
06/07/2023

Unitlabel
06/07/2023

Prodigy
06/07/2023

PRV-1

Customer RR

PRV-1
06/07/2023

PRV-2

HD-1 Griddle

PRV-2
06/07/2023

Greaseduct
06/07/2023

HOOD 1

Griddle

HD1
06/07/2023

PRV-3

HD-2 Fryer

PRV-3
06/07/2023

Greaseduct
06/07/2023

HOOD 2

Fryer
06/07/2023

MAU	Cookline

MAU
06/07/2023

PRV-4	Employee RR

PRV-4
06/07/2023

PRV-5	Mechanical Room

PRV-5
06/07/2023

EF-1A	Mop closet

EF-1
06/07/2023

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CheckList Information

Name :	TECH - STEP 1: INITIAL WALKTHROUGH	**Status :**	Not Completed
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
Perforated diffusers are installed on the cook line? (4-ways will disrupt hood capture)	Yes
All hood filters installed and accounted for?	Yes
Hoods are wired and have power?	Yes
Thermostats have power?	Yes
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	Yes

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CheckList Information

Name : TECH - STEP 2: UNIT DATA AND EVAL **Status :** Not Completed

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
Thermostat wire run from OCP on the RTU to the Ec terminal at the thermostat? If no, jumper can be installed from R to OCP temporarily. (The economizers will not open without OCP being energized.)	Yes
Motors are all operating below the FLA rating?	RTU-3 supply motor was overamping at 11.4/8.0 amps on arrival. Slowed fan to below FLA.
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?	Rotation is incorrect on PRV-1 (customer restroom). Correct on all others.
Belts are tight?	Yes
Grease cup installed on hood fan?	Yes
Hinge kit installed installed on hood fan?	Yes

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Lean grease rated fans 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, no leakage.
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
The hood exhaust fans are installed in correct positions and are not switched?	Yes
HOODS	
Kitchen equipment installed in proper places?	Yes
Can kitchen equipment be turned on for final smoke test?	Yes
Second stage Grease Grabber filters are installed on the griddle hood?	Yes
DOCUMENTATION	
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	Yes

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CheckList Information

Name :	TECH - STEP 3: TEST, ADJUST AND BALANCE	**Status :**	Not Completed
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?	No, position of cookline diffusers directly above hoods was causing smoke capture issues, especially on the griddle.
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".	MAU cookline supply diffuser positioned directly above griddle was dampened shut. Hood capture much improved.

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05-29-23 CULVERS - APPLETON, WI

CheckList Information

Name :	TECH - STEP 4: FINAL TESTS	**Status :**	Not Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

FINAL TESTS	
HOOD CAPTURE TEST	
List equipment turned on for testing	Griddle, Fryer
List smoke candle type used	45 second smoke emitter
Smoke test capture - Perimeter of hood	Griddle: 100% Fryer: 98%, some slight loss on left side of hood due to position of cookline diffusers.
Smoke test capture - Top of cooking surface	Griddle: 100% Fryer: 100%
WITNESS	
Date test was completed	06/06/2023
TAB tech name / Firm	Michael McDonnell / NTi
Site super name / Firm	NA
Owner representative name / Firm (if Applicable)	Maggie Kauer
Building pressure at front & back doors (All Systems On)	0.007"
ADDITIONAL	
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
PRODIGY SETTINGS FOR RTU'S	

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Parameter 65 set to 0	Yes
Parameter 78 set to 0	Yes
Parameter 105 set to 6	Yes
Parameter 156 set to 70 (Dining unit only)	Yes
Parameter 156 set to 65 (Kitchen Unit Only)	Yes
Parameter 170 set to 75 (Dining Unit Only)	Yes
Parameter 170 set to 70 (Kitchen Unit Only)	Yes
Parameter 131 set to the same % as OA minimum position?	Yes
Parameter 117 set to the same % as OA minimum position?	Yes

National TAB

Project: 05-29-23 CULVERS - APPLETON, WI

System/Unit: AHU/RTU

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Asset: RTU1 AREA:KITCHEN

Unit Data		
	Design	**Actual**
MFG	LENNOX	LENNOX
Serial Num	-	5619D07703
Model Num	NA	LGH060H4EH4Y
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	32X14
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	**Actual**
Motor MFG	-	NL
Frame	-	NL
Horsepower	-	1.0
Motor Rpm	-	NL
Phase	-	1
Rated Voltage	-	115
Rated Amperage	-	7.4

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	DD
Motor Bore Size	-	DD
Motor Sheave SetPt	-	82%
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	2000	1927
SF RPM	-	DD
RA CFM	1700	1619
OA CFM	300	308
RL Voltage	-	119
RL Amperage	-	3.9
SF Rotation	-	CORRECT
RA Damper Position	-	86%
Min OA Damper Position	-	14%
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	19.0

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.40"
Fan Suction SP	-	-0.52"
Fan Discharge SP	-	0.64"
Total ESP	-	1.04"
Fan Total SP	-	1.16"

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

Completed By: Michael McDonnell on 06/08/2023

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Project: 05-29-23 CULVERS - APPLETON, WI

System/Unit: AHU/RTU

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Asset: RTU2 AREA:SERVING

Unit Data		
	Design	**Actual**
MFG	LENNOX	LENNOX
Serial Num	-	5619D05900
Model Num	NA	LGH120H4BH3Y
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	2
OA Filter Size 1	-	14.25X23
Num Final Filter 1	-	4
Final Filter Size 1	-	20X25X2

Motor Data		
	Design	**Actual**
Motor MFG	-	INTERLINK
Frame	-	56HZ
Horsepower	-	3.0
Motor Rpm	-	1750
Phase	-	3
Rated Voltage	-	200-230
Rated Amperage	-	8.0-7.8

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	VP56BB (5")
Motor Bore Size	-	7/8"
Motor Sheave SetPt	-	2.5 TURNS OPEN
Fan Sheave Size	-	8"
Fan Sheave Bore	-	1"
Belt CL Distance	-	25"
Num of Belts	-	1
Belt Size	-	BX69
Belt Alignment	-	VERIFIED

Test Data		
	Design	**Actual**
SF CFM	-	3395
SF RPM	-	1054
RA CFM	-	2651
OA CFM	-	744
RL Voltage	-	209/210/210
RL Amperage	-	7.6/7.7/7.6
SF Rotation	-	CORRECT
RA Damper Position	-	81%
Min OA Damper Position	-	19%
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	19.0

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.75"
Fan Suction SP	-	-0.93"
Fan Discharge SP	-	0.52"
Total ESP	-	1.27"
Fan Total SP	-	1.45"

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

Completed By: Michael McDonnell on 06/08/2023

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Project: 05-29-23 CULVERS - APPLETON, WI

System/Unit: AHU/RTU

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Asset: RTU3 AREA:DINING

Unit Data		
	Design	**Actual**
MFG	LENNOX	LENNOX
Serial Num	-	5618D07194
Model Num	NA	LGH120H4BH3Y
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	2
OA Filter Size 1	-	14.25X23
Num Final Filter 1	-	4
Final Filter Size 1	-	20X25X2

Motor Data		
	Design	**Actual**
Motor MFG	-	INTERLINK
Frame	-	56HZ
Horsepower	-	3.0
Motor Rpm	-	1750
Phase	-	3
Rated Voltage	-	200-230
Rated Amperage	-	8.0-7.8

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	5.25"
Motor Bore Size	-	7/8"
Motor Sheave SetPt	-	5 TURNS OPEN
Fan Sheave Size	-	8"
Fan Sheave Bore	-	1"
Belt CL Distance	-	26"
Num of Belts	-	1
Belt Size	-	BX69
Belt Alignment	-	VERIFIED

Test Data		
	Design	**Actual**
SF CFM	-	4239
SF RPM	-	963
RA CFM	-	3374
OA CFM	-	865
RL Voltage	-	210/210/209
RL Amperage	-	7.6/7.5/7.6
SF Rotation	-	CORRECT
RA Damper Position	-	53%
Min OA Damper Position	-	47%
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	19.0

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.52"
Fan Suction SP	-	-0.85"
Fan Discharge SP	-	0.61"
Total ESP	-	1.13"
Fan Total SP	-	1.46"

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

Completed By: Michael McDonnell on 06/08/2023

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Project: 05-29-23 CULVERS - APPLETON, WI

System/Unit: FAN - Exhaust

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Asset: EF1 AREA:MOP CLOSET

Unit Data		
	Design	**Actual**
MFG	NA	NA
Model Num	NA	NA

Motor Data		
	Design	**Actual**

Test Data		
	Design	**Actual**
CFM	75	46

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Project: 05-29-23 CULVERS - APPLETON, WI

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: PRV1 AREA:CUSTOMER RR

Unit Data		
	Design	**Actual**
MFG	GREENHECK	GREENHECK
Model Num	NA	GB-100-4X-OD-2A
Serial Num	-	99L15502
Type	-	DOWNBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	CENTURY
Frame	-	48
Horsepower	-	0.25
Motor Rpm	-	1725
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	5.0
Service Factor	-	1.35

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	2.5"
Motor Bore Size	-	0.5"
Motor Sheave SetPt	-	FIXED
Fan Sheave Size	-	3.25"
Fan Sheave Bore	-	3/4"
Belt CL Distance	-	6.5"
Num of Belts	-	1
Belt Size	-	4L190

Test Data		
	Design	**Actual**
CFM	-	0
Fan RPM	-	0
Fan Rotation	-	INCORRECT
Motor RPM	-	0
RL Voltage	-	0
RL Amperage	-	0
Suction ESP	-	0
Discharge ESP	-	0
Total ESP	-	0

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Notes: ROTATION INCORRECT. NEEDS SERVICE. LEFT OFF AT DISCONNECT.

Date: 06/08/2023

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National TAB

Project: 05-29-23 CULVERS - APPLETON, WI

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: PRV2 AREA:HD1 GRIDDLE

Unit Data		
	Design	**Actual**
MFG	ACCUREX	ACCUREX
Model Num	XCUBE-160XP-15	XCUBE-160XP-15
Serial Num	-	20824988
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	WEG
Frame	-	NL
Horsepower	1.5	1.5
Motor Rpm	1725	1760
Phase	3	3
Voltage (rated)	208	230
Amperage (rated)	-	4.20
Service Factor	-	1.15

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	AK30
Motor Bore Size	-	1"
Motor Sheave SetPt	-	2 TURNS
Fan Sheave Size	-	VP44
Fan Sheave Bore	-	5/8"
Belt CL Distance	-	6"
Num of Belts	-	1
Belt Size	-	AX24

Test Data		
	Design	**Actual**
CFM	1500	1506
Fan RPM	2396	2182
Fan Rotation	-	CW, CORRECT
Motor RPM	-	1776
RL Voltage	-	209/209/210
RL Amperage	-	3.4/3.3/3.4
Suction ESP	-	-1.014"
Discharge ESP	-	ATM
Total ESP	2.3"	1.014"

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National TAB

Project: 05-29-23 CULVERS - APPLETON, WI

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: PRV3 AREA:HD2 FRYER

Unit Data		
	Design	**Actual**
MFG	ACCUREX	ACCUREX
Model Num	XCUBE-140-7	XCUBE-140-7
Serial Num	-	20824989
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	WEG
Frame	-	56
Horsepower	0.5	0.75
Motor Rpm	1725	1760
Phase	3	3
Voltage (rated)	208	230
Amperage (rated)	-	2.3
Service Factor	-	1.25

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	VP64S
Motor Bore Size	-	5/8"
Motor Sheave SetPt	-	4 TURNS OPEN
Fan Sheave Size	-	4"
Fan Sheave Bore	-	3/4"
Belt CL Distance	-	5"
Num of Belts	-	1
Belt Size	-	AAP23

Test Data		
	Design	**Actual**
CFM	1500	1622
Fan RPM	1368	1110
Fan Rotation	-	CW, CORRECT
Motor RPM	-	1782
RL Voltage	-	209/209/210
RL Amperage	-	1.7/1.7/1.9
Suction ESP	-	-0.79"
Discharge ESP	-	ATM
Total ESP	1.0"	0.79"

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National TAB

Project: 05-29-23 CULVERS - APPLETON, WI

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: PRV4 AREA:EMPLOYEE RR / MECHANICAL CLOSET

Unit Data		
	Design	**Actual**
MFG	GREENHECK	GREENHECK
Model Num	NA	G-70-DGEX-OD
Serial Num	-	98L13089
Type	-	DOWNBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	DAYTON
Horsepower	-	NL
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	0.92

Test Data		
	Design	**Actual**
CFM	-	82
Fan RPM	-	DD
Fan Rotation	-	CORRECT
Motor RPM	-	DD
System SetPt	-	SINGLE SPEED
RL Voltage	-	119
RL Amperage	-	0.89
Total ESP	-	0.121"
Fan Inlet SP	-	-0.121"
Fan Discharge SP	-	ATM

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National TAB

Project: 05-29-23 CULVERS - APPLETON, WI

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: PRV5 AREA:REAR MECHANICAL ROOM

Unit Data		
	Design	**Actual**
MFG	GREENHECK	GREENHECK
Model Num	NA	GB-180-LMDX-QD
Serial Num	-	99B00697
Type	-	DOWNBLAST
Configuration	-	VERTICAL

Test Data		
	Design	**Actual**
Fan RPM	-	1273
Motor RPM	-	1742

Motor Data		
	Design	**Actual**
Motor MFG	-	A.O. SMITH
Frame	-	LA56H
Horsepower	-	1.5
Motor Rpm	-	1725
Phase	-	3
Voltage (rated)	-	200-230
Amperage (rated)	-	5.0
Service Factor	-	1.20

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	4"
Motor Bore Size	-	5/8"
Fan Sheave Size	-	AK56
Fan Sheave Bore	-	3/4"
Belt CL Distance	-	6.5"
Num of Belts	-	1
Belt Size	-	4L280

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Notes: [1] AIRFLOW NOT MEASURED. DOES NOT IMPACT BUILDING PRESSURE AS LONG AS DOOR TO MECHANICAL ROOM IS KEPT CLOSED. RECOMMEND DOOR IS KEPT CLOSED.

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National TAB

Project: 05-29-23 CULVERS - APPLETON, WI

System/Unit: FAN - Supply

Comfort. Under control.

Asset: MAU1 AREA:COOKLINE

Unit Data		
	Design	**Actual**
MFG	NA	NL
Model Num	NA	NL
Type	-	MAU
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	56
Horsepower	-	0.75
Motor Rpm	-	1725
Phase	-	3
Voltage (rated)	-	208-230
Amperage (rated)	-	2.7-2.8
Service Factor	-	1.25

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	4"
Motor Bore Size	-	5/8"
Fan Sheave Size	-	AK89
Fan Sheave Bore	-	1"
Belt CL Distance	-	16"
Num of Belts	-	1
Belt Size	-	A-50
Belt Alignment Verified	-	VERIFIED

Gas Heat		
	Design	**Actual**
Heater Operates (y/n)	-	YES
Flame Status (pass/fail)	-	PASS

Test Data		
	Design	**Actual**
CFM	-	1799
SF RPM	-	770
Motor RPM	-	1716
RL Voltage	-	209/209/209
RL Amperage	-	2.4/2.4/2.3
Total ESP	-	0.55"
Fan Discharge SP	-	0.55"

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

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National TAB

Project: 05-29-23 CULVERS - APPLETON, WI

System/Unit: Kitchen Hood Type I

Comfort. Under control.

Asset: HD1 AREA:GRIDDLE

Unit Data		
	Design	**Actual**
MFG	ACCUREX	ACCUREX
Model Num	XGEP-64-S	XGEP-64-S
Job / Serial Num	-	21014054
Type	TYPE I LOW PROXIMITY	TYPE I LOW PROXIMIITY
Hood length	64	64
Hood Width	23	26

Test Data Exhaust		
	Design	**Actual**
Filter Type	GREASE GRABBER	GREASER GRABBER
Filter Size 1	16X16	16X16
Filter Qty 1	4	4
Filter AK factor size 1	1.53	1.53
Filter Total AK Area	6.12	6.12
Filter1 FPM	-	261
Filter2 FPM	-	223
Filter3 FPM	-	225
Filter4 FPM	-	273
Filter Ave FPM(corr)	-	246
CFM	1500	1506

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

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National TAB

Project: 05-29-23 CULVERS - APPLETON, WI

System/Unit: Kitchen Hood Type I

Comfort. Under control.

Asset: HD2 AREA:FRYERS

Unit Data		
	Design	**Actual**
MFG	ACCUREX	ACCUREX
Model Num	XXEP-83-S	XXEP-83-S
Job / Serial Num	-	21036392
Type	TYPE I LOW PROXIMITY	TYPE I LOW PROXIMITY
Hood length	83	83
Hood Width	23	26

Test Data Exhaust		
	Design	**Actual**
Filter Type	X TRACTOR	X TRACTOR
Filter Size 1	16X16	16X16
Filter Qty 1	5	5
Filter AK factor size 1	1.53	1.53
Filter Total AK Area	7.65	7.65
Filter1 FPM	-	217
Filter2 FPM	-	211
Filter3 FPM	-	201
Filter4 FPM	-	213
Filter5 FPM	-	219
Filter Ave FPM(corr)	-	212
CFM	1500	1622

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

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