Report By:

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

NATIONAL TAB

Comfort. Under control.

Report: TAB REPORT
Function: Test, Adjust, & Balance
Date: 12/29/2022

PROJECT

12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

2945 Voyager Dr

GREEN BAY , WI 54311

Client

McCon Building Corporation
1059 Circle Drive
PO Box 247
Highland, WI 53543

National TAB

Project: 12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

Table Of Contents

Project Summary

The summary below provides a quick understanding of our scope of work and general testing procedures. Enclosed in the report is further detail about your building performance including recommendations, asset data, and pictures. Our focus is to work with the trades to remedy any issues or deficiencies during the actual field balancing and not after the balancing has occurred to achieve a positive environment and outcome. The level of success is determined by the availability of the trades, possible parts needed, or time constraints.

RTU's (Roof Top Units)
Each of the RTU's were measured at their terminal devices or via traverse to establish a total flow for that unit. Each RTU was adjusted to within tolerance of the engineer's design flow. Each outlet was then adjusted to within tolerance of the design flow. Outside air was measured by reading the intake air opening with a velocity grid and multiplying by the free area. The outside air damper was adjusted until the airflow was within the design requirements. Any equipment that fell outside of that tolerance is noted throughout the report.

Kitchen Exhaust Hood & Associated Fans
Each kitchen exhaust fan was measured at the hood filter bay utilizing a velocity matrix and a manufacturer's correction factor. Each filter velocity is multiplied by the manufacturer's corrected area. The sum of these readings equals the total flow of the exhaust fans. The total flow of the exhaust was then adjusted to within tolerance of the design flow.

General Exhaust Fans
The general exhaust fans were measured by reading each air device with a flow hood. The total airflow for each fan is equivalent to the sum of these readings. Fan speed was then adjusted so that the airflow was within tolerance of design. Each terminal device was balanced to within tolerance of the design volume using the installed volume dampers. Any equipment that fell outside of this tolerance is noted throughout the report.

Final Building Tests
After completing the test and balance the final building pressure was measured. It was confirmed that the building pressure fell within acceptable tolerances of -0.02" wc to +0.02" wc and that the pressure measurement coincides with the actual and design net airflow. Any deviations from these standards are noted throughout the report.
The hood capture was tested at the perimeter of the hood and the cook top level with the equipment heat on to ensure satisfactory hood capture and containment.

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12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

Project Issue Information

Issue Name : HD-1 (fryer) filter damaged.

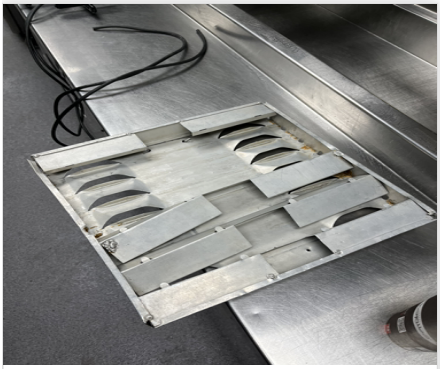
Description : Several hood filters have significant wear. One filter on HD-1 is fairly damaged and needs replacement. Recommend all filters are evaluated and replaced as necessary.

Created By : National TAB **Assigned To :** National TAB - Michael McDonnell

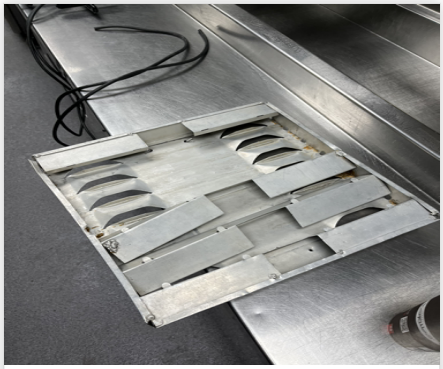
Status : Open

Originated Date : 12/29/2022 - Michael McDonnell - National TAB

Project Issue File Details



Filter.jpeg



Filter.jpeg

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12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

Project Issue Information

Issue Name : Kitchen Diffuser not Connected

Description : A diffuser positioned in front of the dishwasher exhaust hood is not connected to ductwork. Diffuser was temporarily connected for balance. Recommend the flex run to this diffuser is reattached and properly secured.

Created By : National TAB **Assigned To :** National TAB - Michael McDonnell

Status : Open

Originated Date : 12/29/2022 - Michael McDonnell - National TAB

Comfort. Under control.

12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

Project Issue Information

Issue Name : Kitchen Supply Grille Serving Attic Space.

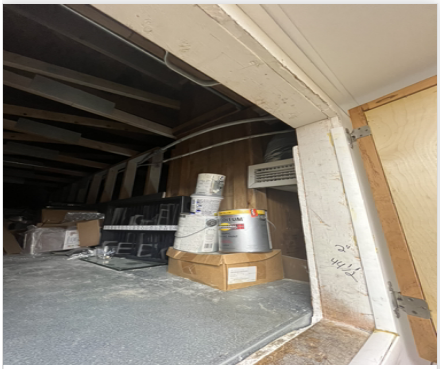
Description : A sidewall grille is installed and supplying air to the attic space above the Walk-in coolers. The grille was dampened shut to push more air into the kitchen space.

Created By : National TAB **Assigned To :** National TAB - Michael McDonnell

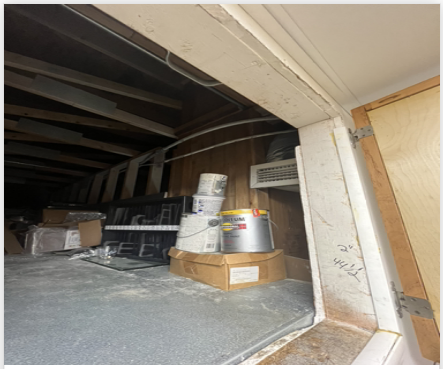
Status : Open

Originated Date : 12/29/2022 - Michael McDonnell - National TAB

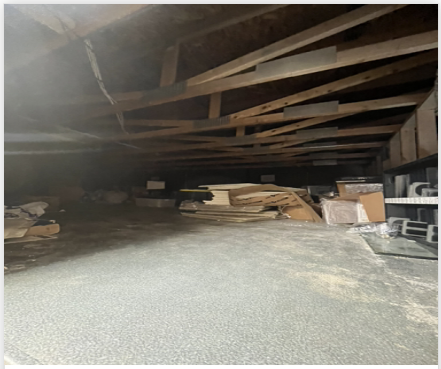
Project Issue File Details



Supplygrille.jpeg



Supplygrille.jpeg



Storagespace.jpeg

NATIONAL TAB

AIR BALANCE SCHEDULE

UNIT	AREA SERVED	HVAC SUPPLY		HVAC RETURN		HVAC OUTDOOR		OA %		HOOD MAKE-UP		HOOD EXHAUST		GENERAL EXH.	
		DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL
RTU-1	DINING	5500	5767	3795	3914	1705	1853	31.0%	32.1%						
RTU-2	KITCHEN	5500	5332	3795	3494	1705	1838	31.0%	34.5%						
EF-1	MOP SINK													75	0
PRV1	RESTROOMS													375	0
PRV2	GRIDDLE HD-1											1500	1597		
PRV3	FRYER HD-2											1500	1614		
PRV4	DISH HOOD											350	0		
TOTALS		11000	11099	7590	7408	3410	3691			0	0	3350	3211	450	0

NET BUILDING AIRFLOW CALCULATION

TOTALS		ACTUAL
TOTAL OA	3410	3691
TOTAL EXHAUST	3800	3211
NET AIRFLOW	-390	480

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H20)
FRONT	0.01"
SIDE	0.009"
REAR	0.01"
AVERAGE	**0.01**

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] Balanced RTU outside air to high end of design to accommodate PRV-1, PRV-4, and EF-1A exhaust should these fans be repaired. Recommend PRV-4 be tied into dishwasher operation to keep building pressure positive if all fans are repaired.

Comfort. Under control.

12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

CheckList Information

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

CheckList Item Details

STORE FRONT

CulversGreenBay.jpeg

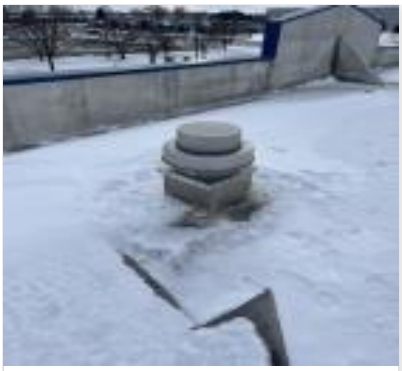
RTU-1

RTU-1.jpeg

RTU-2

RTU-2.jpeg

PRV-1



PRV-1.jpeg

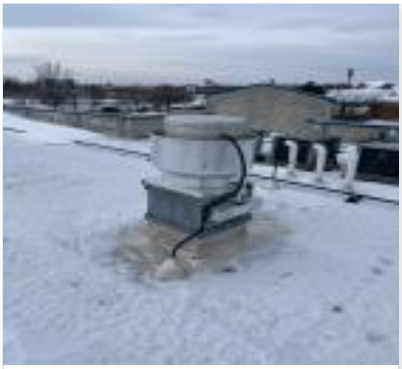
PRV-1motor.jpeg

PRV-2

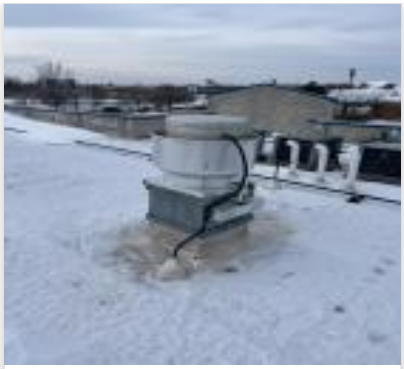
PRV-2.jpeg

PRV-2.jpeg

PRV-3



PRV-3.jpeg



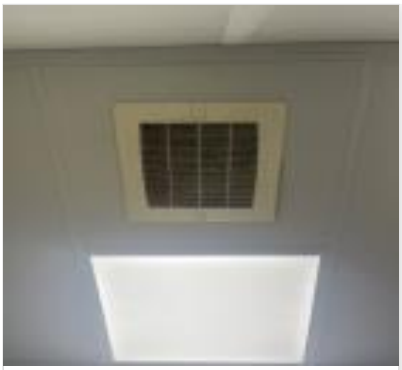
PRV-3.jpeg

PRV-4

PRV-4.jpeg

PRV-4.jpeg

EF-1A

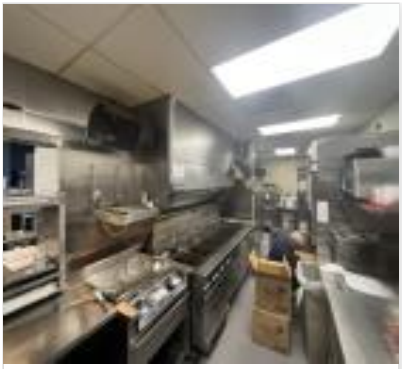


EF-1A.jpeg

HOOD 1

HD-1.jpeg

HOOD 2



HD-2.jpeg

HOOD 3

HD-3.jpeg

Notes/Comments :

National TAB

Project: 12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

System/Unit: AHU/RTU

Comfort. Under control.

Asset: RTU1 AREA:DINING

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Serial Num	-	5607542
Model Num	CASTRU3-I.400-24-15T-DOAS	CASTRU3-I.400-24-15T-DOAS
Type	DOAS	DOAS
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	4
OA Filter Size 1	-	16X25X2
Num Final Filter 1	-	8
Final Filter Size 1	-	20X25X2

Motor Data		
	Design	**Actual**
Motor MFG	-	TECO WESTINGHOUSE
Frame	-	213T
Horsepower	7.50	7.5
Motor Rpm	-	1755
Phase	3	3
Rated Voltage	208	230
Rated Amperage	-	19.1

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	DD
Motor Bore Size	-	DD
Motor Sheave SetPt	-	52.0 HZ
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	5500	5767
SF RPM	-	1521
RA CFM	3795	3914
OA CFM	1705	1853
RL Voltage	-	213 [1]
RL Amperage	-	16.5 [1]
SF Rotation	-	CORRECT
Min OA Damper Position	-	4.2
Min OA Damper Type	-	ECONOMIZER

Performance Data		
	Design	**Actual**
Fan Discharge SP	-	0.48"

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

Completed By: Michael McDonnell

Notes:[1] TAKEN FROM VFD HMI. [2] BALANCED OA TO HIGH END OF DESIGN TO ACCOMODATE PRV-1 AND PRV-4 EXHAUST (ONCE REPAIRED) AND KEEP BUILDING PRESSURE NEUTRAL.

National TAB

Project: 12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

System/Unit: AHU/RTU

Comfort. Under control.

Asset: RTU2 AREA:KITCHEN

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Serial Num	-	5607542
Model Num	CASTRU3-I.400-24-15T-DOAS	CASTRU3-I.400-24-15T-DOAS
Type	DOAS	DOAS
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	4
OA Filter Size 1	-	16X25X2
Num Final Filter 1	-	8
Final Filter Size 1	-	20X25X2

Motor Data		
	Design	**Actual**
Motor MFG	-	TECO WESTINGHOUSE
Frame	-	213T
Horsepower	7.50	7.50
Motor Rpm	-	1755
Phase	3	3
Rated Voltage	208	230
Rated Amperage	-	19.1

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	DD
Motor Bore Size	-	DD
Motor Sheave SetPt	-	52.0 HZ
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	5500	5332
SF RPM	-	1521
RA CFM	3795	3494
OA CFM	1705	1838
RL Voltage	-	215 [1]
RL Amperage	-	16.5 [1]
SF Rotation	-	CORRECT
Min OA Damper Position	-	4.2
Min OA Damper Type	-	ECONOMIZER

Performance Data		
	Design	**Actual**
Fan Discharge SP	-	0.78"

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

Completed By: Michael McDonnell

Notes:[1] TAKEN FROM VFD HMI. [2] BALANCED OA TO HIGH END OF DESIGN TO ACCOMODATE PRV-1 AND PRV-4 EXHAUST (ONCE REPAIRED) AND KEEP BUILDING PRESSURE NEUTRAL.

National TAB

Project: 12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: PRV1 AREA:RESTROOMS

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	S-085SDSX
Serial Num	-	108790060706
Type	-	DOWNBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	MCMILLAN
Frame	-	NL
Horsepower	-	1/20
Motor Rpm	-	1550/1300/1050
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	1.2

Test Data		
	Design	**Actual**
CFM	-	0
Fan RPM	-	0
Fan Rotation	-	CW
Motor RPM	-	0
System SetPt	-	[1]
RL Voltage	-	[1]
RL Amperage	-	[1]
Total ESP	-	[1]
Fan Inlet SP	-	[1]
Fan Discharge SP	-	[1]

Completed By: Michael McDonnell

Notes: [1] FAN NOT OPERATIONAL. NEEDS SERVICE. MAY NEED MOTOR REPLACEMENT.

National TAB

Project: 12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: PRV2 AREA:HOOD 1

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	CUBE-161XP-15-G
Serial Num	-	103790050706
Type	-	UPBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	56H
Horsepower	-	1.5
Motor Rpm	-	1725
Phase	-	3
Voltage (rated)	-	208-230
Amperage (rated)	-	4.8-4.4
Service Factor	-	1.15

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	4"
Motor Bore Size	-	5/8"
Motor Sheave SetPt	-	2 TURNS OPEN
Fan Sheave Size	-	3"
Fan Sheave Bore	-	1"
Belt CL Distance	-	6"
Num of Belts	-	1
Belt Size	-	A22

Test Data		
	Design	**Actual**
CFM	-	1597
Fan RPM	-	2008
Fan Rotation	-	CW
Motor RPM	-	1775
RL Voltage	-	211/211/211
RL Amperage	-	3.1/3.1/3.0
Suction ESP	-	-1.07"
Discharge ESP	-	ATM
Total ESP	-	1.07"

Completed By: Michael McDonnell

Notes:

National TAB

Project: 12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: PRV3 AREA:HOOD 3

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	CUBE-161XP-10-G
Serial Num	-	108790030706
Type	-	UPBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	56
Horsepower	-	1.0
Motor Rpm	-	1725
Phase	-	3
Voltage (rated)	-	208-230
Amperage (rated)	-	3.40-3.20
Service Factor	-	1.15

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	VP44
Motor Bore Size	-	5/8"
Motor Sheave SetPt	-	1 TURN OPEN
Fan Sheave Size	-	AK32
Fan Sheave Bore	-	1"
Belt CL Distance	-	6.5"
Num of Belts	-	1
Belt Size	-	A-22

Test Data		
	Design	**Actual**
CFM	-	1614
Fan RPM	-	2098
Fan Rotation	-	CW
Motor RPM	-	1720
RL Voltage	-	211/211/211
RL Amperage	-	2.4/2.7/2.4
Suction ESP	-	-0.83"
Discharge ESP	-	ATM
Total ESP	-	0.83"

Completed By: Michael McDonnell

Notes:

National TAB

Project: 12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: PRV4 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	G-131-B-X
Serial Num	-	108790070706
Type	-	DOWNBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	NL
Frame	-	48Y
Horsepower	-	1/6
Motor Rpm	-	1140
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	2.2
Service Factor	-	1.0

Test Data		
	Design	**Actual**
CFM	-	0
Fan RPM	-	0
Fan Rotation	-	[1]
Motor RPM	-	0
System SetPt	-	[1]
RL Voltage	-	[1]
RL Amperage	-	[1]
Total ESP	-	[1]
Fan Inlet SP	-	[1]
Fan Discharge SP	-	[1]

Completed By: Michael McDonnell

Notes: [1] FAN NOT OPERATIONAL. NEEDS SERVICE. TURNED OFF DISCONNECT AT ROOF.

National TAB

Project: 12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

System/Unit: Kitchen Hood Type I

Comfort. Under control.

Asset: HD1 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	[1]
Job / Serial Num	-	[1]
Type	-	TYPE I
Hood length	-	64"
Hood Width	-	26"

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	GREASE GRABBER
Filter Size 1	-	16X16
Filter Qty 1	-	4
Filter AK factor size 1	-	1.53
Filter Total AK Area	-	6.12
Filter1 FPM	-	274
Filter2 FPM	-	258
Filter3 FPM	-	240
Filter4 FPM	-	270
Filter Ave FPM(corr)	-	261
CFM	-	1597

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

Completed By: Michael McDonnell

Notes:

National TAB

Project: 12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

System/Unit: Kitchen Hood Type I

Comfort. Under control.

Asset: HD2 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	[1]
Job / Serial Num	-	[1]
Type	-	TYPE I
Hood length	-	83"
Hood Width	-	26"

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	GREASE GRABBER
Filter Size 1	-	16X16
Filter Qty 1	-	5
Filter AK factor size 1	-	1.53
Filter Total AK Area	-	7.65
Filter1 FPM	-	209
Filter2 FPM	-	208
Filter3 FPM	-	218
Filter4 FPM	-	215
Filter5 FPM	-	205
Filter Ave FPM(corr)	-	211
CFM	-	1614

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

Completed By: Michael McDonnell

Notes:

National TAB

Project: 12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

System/Unit: Kitchen Hood Type II

Comfort. Under control.

Asset: HD3 AREA:

Unit Data		
	Design	**Actual**
MFG	GREENHECK	GREENHECK
Model Num	GD3-3.50-S 1180	GD3-3.50-S 1180
Serial Num	-	10903245
Type	-	TYPE II
Hood length	-	42"
Hood Width	-	42"

Test Data		
	Design	**Actual**
Exhaust CFM	-	0

Completed By: Michael McDonnell

Notes: [1] EXHAUST HOOD NOT OPERATIONAL. FAN NEEDS SERVICE.

Comfort. Under control.

12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

CheckList Information

Name :	TECH - STEP 1: INITIAL WALKTHROUGH	**Status :**	NotSubmitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

INITIAL SITE WALKTHROUGH

All diffusers and grilles are installed and match design?	Yes
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
On the cookline diffusers neck is there 18" (12" minimum) straight rigid duct run attached?	No

Notes/Comments :

Comfort. Under control.

12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

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
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.)	N/A, Captiveaire DOAS units installed.
Motors are all operating below the FLA rating?	Yes
Are belts tight?	N/A, direct drive units.
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?	Yes
Grease cup installed on hood fan?	Yes
Hinge kit installed installed on hood fan?	Yes
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
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?	Grease grabber filters installed on both fryer and griddle hoods.
DOCUMENTATION	
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	Yes

Notes/Comments :

Comfort. Under control.

12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

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".	Yes

Notes/Comments :

Comfort. Under control.

12-26 CULVERS - GREEN BAY, WI (FACILITY TAB)

CheckList Information

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

CheckList Item Details

FINAL TESTS	
HOOD CAPTURE TEST	
List equipment turned on for testing	Griddle, Fryer
List smoke candle type used	45 second smoke emitter
Smoke test capture - Perimeter of hood	100%
Smoke test capture - Top of cooking surface	100%
WITNESS	
Date test was completed	12/28/2022
TAB tech name / Firm	Michael McDonnell / National TAB
Site super name / Firm	N/A
Owner representative name / Firm (if Applicable)	N/A
Building pressure at front & back doors (All Systems On)	0.010”
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, occupancy based on hood operation.
PRODIGY SETTINGS FOR RTU'S	
Parameter 65 set to 0	

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

Notes/Comments :