

Report By:

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



Report: TAB Report Penn Station Brunswick

Function: Test, Adjust, & Balance

Date: 12/01/2023

PROJECT

11-27-23 PENN STATION - BRUNSWICK, OH

3817 CENTER RD

BRUNSWICK, OH 44221

Client

C&T DESIGN
4025 PORT UNION RD.
FAIRFIELD, OH 45014

National TAB

Project: 11-27-23 PENN STATION - BRUNSWICK, OH

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Project Summary

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

RTU's (Roof Top Units) w/ Diffusers

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

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. . Any EF's that fell outside of this tolerance is noted throughout the report.

MUA (Make Up Air Unit) w/ PSP

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. Adjustments to the fan speed were made in order to bring the unit to within design tolerance. Any MUA's that fell outside of this tolerance is noted throughout the report.

General Exhaust Fans w/ Grilles

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

Final Building Tests

After completing the test and balance the final building pressure was measured. It was confirmed that the building pressure fell within acceptable tolerances of $-0.02''$ wc to $+0.02''$ wc and that the pressure measurement coincides with the actual and design net airflow. Any deviations from these standards are noted throughout the report.

The hood capture was tested at the perimeter of the hood and the cook top level with the equipment heat on to ensure satisfactory hood capture and containment.

There are a few issues & are listed below within report. RTU3 had leakage. For balancing purposes we sealed up with cardboard to balance the unit. The GC was notified & he is having his HVAC company fix it immediately. Once sealed it will provide the same amount of airflow to space as reported since it was temporarily sealed with cardboard during testing. ALSO (very important), the space will not be neutral or positive in pressure due to the Neighbor systems. See below for detail. Basically if you turn all exhaust systems off at Penn Station you are still VERY negative in space due to chinese restaurant next door.

Issue List

- Building Pressure
- CRITICAL: RTU-3 Leakage issue



11-27-23 PENN STATION - BRUNSWICK, OH

Project Issue Information

Issue Name : Building Pressure
Description : Note: Net building pressure is designed to be positive. Actual building pressure is Net negative after TAB. The neighboring suite is a Chinese restaurant that does not have MUA running. Penn station space pressure test with all systems off: -0.021" AVG showing neighbor is causing net negative pressure.

Created By : National TAB **Assigned To :** National TAB - Tyler Youells
Status : Open
Priority : InfoOnly **Asset Tag :**
Originated Date : 12/01/2023 - Tyler Youells - National TAB

Project Issue File Details



Neighboringequipment...
12/01/2023



11-27-23 PENN STATION - BRUNSWICK, OH

Project Issue Information

Issue Name : CRITICAL: RTU-3 Leakage issue
Description : RTU-3 Curb adapter is preventing the unit from sitting flush to the curb/duct connections.
Created By : National TAB **Assigned To :** National TAB - Tyler Youells
Status : Pending
Priority : Urgent **Asset Tag :**
Originated Date : 11/30/2023 - Tyler Youells - National TAB

Project Issue Response Details

• **12/01/2023 National TAB - Tyler Youells**

- Pictures of Gap before taping



Supplygap
12/01/2023



Returngap(1)
12/01/2023



Curbinterference
12/01/2023

• **12/01/2023 National TAB - Tyler Youells**

- MC temporarily taped the gaps so TAB can be completed. MC stated they will come back for a more permanent solution



Gapssealed
12/01/2023

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	2000	2089	1500	1565	500	524	25.0%	25.1%						
RTU-2	BOH	2000	2047	1500	1498	500	549	25.0%	26.8%						
RTU-3	SERVING AREA	2000	1978	1500	1461	500	517	25.0%	26.1%						
MUA-1	COOKLINE									1630	1616				
KEF-1	HD1 GRILL											1250	1256		
KEF-2	HD2 OVN											600	595		
KEF-3	HD3 FRY											850	846		
EF-1	MENS RR													150	158
EF-2	WOMENS RR													75	70
TOTALS		6000	6114	4500	4524	1500	1590			1630	1616	2700	2697	225	228

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	3130	3206
TOTAL EXHAUST	2925	2925
NET AIRFLOW	205	281

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H2O)
FRONT	-0.0242
SIDE	
REAR	-0.0179
AVERAGE	-0.0211

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] BUILDING PRESSURE TESTED WITH ALL SYSTEMS OFF: -0.0219" AVG. NEIGHBORING STORE IS A CHINESE RESTAURANT THAT DOES NOT HAVE WORKING MUA.

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



Rtu1
12/01/2023

RTU-2

Comment:



Rtu3(1)
12/01/2023

RTU-3

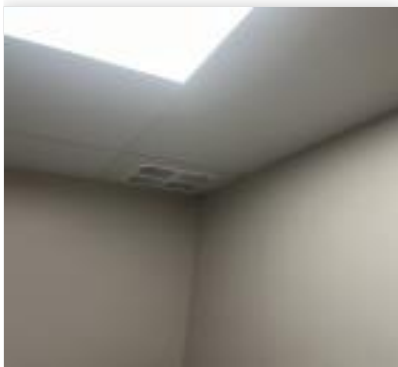
Comment:



Rtu3(1)
12/01/2023

EF-1

Comment:



Ef1
12/01/2023

EF-2

Comment:



Ef2(1)
12/01/2023

KEF-1

Comment:



Kef1(1)
12/01/2023

KEF-2

Comment:



Kef2
12/01/2023

KEF-3

Comment:



Kef3(1)
12/01/2023

MUA

Comment:



Mua
12/01/2023

HD-1

Comment:



Hood1
12/01/2023

HD-2

Comment:



Hood2
12/01/2023

HD-3

Comment:



Hood3
12/01/2023



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CheckList Information

Name : TECH - STEP 1: INITIAL WALKTHROUGH **Status :** Not Completed
Assigned Organization : MULTIPLE **Asset :**
Requesting Organization : National TAB
Created Date : 11/30/2023 - Brianna Biggs - National TAB

CheckList Item Details

INITIAL SITE WALKTHROUGH

Review Plan Review Checklist, has it been signed off and meets our standards to start balancing? If not contact processor to ensure job is ready.

Comment:

Yes

All diffusers and grilles are installed and match design?

Comment:

Yes

All hood filters installed and accounted for?

Comment:

Yes

Hoods are wired and have power?

Comment:

Yes

Hood is free of alarms?

Comment:

Yes

Thermostats have power?

Comment:

Yes

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

Comment:



11-27-23 PENN STATION - BRUNSWICK, OH

CheckList Information

Name : TECH - STEP 2: UNIT DATA AND EVAL **Status :** Not Completed
Assigned Organization : MULTIPLE **Asset :**
Requesting Organization : National TAB
Created Date : 11/30/2023 - Brianna Biggs - 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?

Comment:

N/A Manual dampers

DCV Max damper opening position is set to minimum?

Comment:

N/A Manual Dampers

Free cooling enthalpy set point set for lowest setting (Typically "D")

Comment:

N/A Manual Dampers

Motors are all operating below the FLA rating?

Comment:

Yes

Are belts tight?

Comment:

N/A Units are DD

If direct drive unit is the speed controller working.

Comment:

Motors controlled by motor speed taps

Is gas piping installed and valves turned on?

Comment:

Yes

Unit free of noticeable noise and vibration

Comment:

Yes

EF's

Rotation is correct?

Comment:

Yes

Belts are tight?

Comment:

N/A units are DD

Grease cup installed on hood fan?

Comment:

Yes

Hinge kit installed installed on hood fan?

Comment:

Yes

Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?

Comment:

Yes

Flex conduit is long enough so that fan can be completely tilted back?

Comment:

Yes

There is no major leakage around base of fan?

Comment:

No major leakage to note

Is the motor operating below the motor FLA rating?

Comment:

Yes

For restroom fan(s) is the back draft damper installed and can it fully open?

Comment:

N/A for ceiling fans

Unit free of noticeable noise and vibration?

Comment:

Yes

MUA

Rotation is correct?

Comment:

Yes

Gas piping is installed and valves are in on position?

Comment:

Yes

Heater tested and is functional?

Comment:

Yes

Internal motorized damper is fully opening?

Comment:

Yes

Motor is operating below the FLA rating?

Comment:

Yes

Unit free of noticeable noise and vibration?

Comment:

Yes

HOODS

Kitchen equipment installed in proper places?

Comment:

Yes

Can kitchen equipment be turned on for final smoke test?

Comment:

Yes

DOCUMENTATION

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

Comment:

Yes



11-27-23 PENN STATION - BRUNSWICK, OH

CheckList Information

Name : TECH - STEP 3: TEST, ADJUST AND BALANCE **Status :** Not Completed
Assigned Organization : MULTIPLE **Asset :**
Requesting Organization : National TAB
Created Date : 11/30/2023 - Brianna Biggs - National TAB

CheckList Item Details

TEST, ADJUST, AND BALANCE ALL EQUIPMENT:

DURING TESTING MAKE NOTE OF THE FOLLOWING:

Is space free of drafting? Yes

Comment:

Is space comfortable in all areas? Yes

Comment:

Is the space free of ventilation noise? Yes

Comment:

If deviations from design were necessary to resolve 1-3 what were they? Otherwise put "NA".

Comment:

NA



11-27-23 PENN STATION - BRUNSWICK, OH

CheckList Information

Name : TECH - STEP 4: FINAL TESTS **Status :** Not Completed
Assigned Organization : MULTIPLE **Asset :**
Requesting Organization : National TAB
Created Date : 11/30/2023 - Brianna Biggs - National TAB

CheckList Item Details

FINAL TESTS

HOOD CAPTURE TEST

List equipment turned on for testing

Comment:

GRIDDLE, DOUBLE FRYERS

List smoke candle type used

Comment:

45 SEC SMOKE

Smoke test capture - Perimeter of hood

Comment:

100%

Smoke test capture - Top of cooking surface

Comment:

100%

WITNESS

Date test was completed

12/01/2023

Comment:

TAB tech name / Firm

Comment:

TYLER/NTAB

Site super name / Firm

Comment:

KEVIN/PAGE IMPROVEMENTS

Owner representative name / Firm (if Applicable)

Comment:

N/A

Building pressure at front & back doors (All Systems On)

Comment:

-0.021" AVG

ADDITIONAL

Do actual net building airflow, design net building airflow, and pressure coincide? If not why? (All three should either be positive or negative)

Comment:

NO, BUILDING NEXT DOOR IS A CHINESE RESTAURANT AND DOES NOT HAVE RUNNING MUA

PROGRAM THERMOSTATS

Occupied 7:15AM-10:15PM: 68 Heat/72 Cool (NOTE: 3 degree MAX setback) Yes

Comment:

Unoccupied 10:16PM-7:14AM: 65 Heat/75 Cool Yes

Comment:

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Project: 11-27-23 PENN STATION - BRUNSWICK, OH

System/Unit: AHU/RTU



Asset: RTU1

AREA:DINING

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5623J04155
Model Num	NA	KGB060S4DH5Y
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	16X16
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NOT ACCESSIBLE
Frame	-	NOT ACCESSIBLE
Horsepower	-	0.8
Motor Rpm	-	1575
Phase	3	1
Rated Voltage	208	208
Rated Amperage	-	4.0

Test Data		
	Design	Actual
SF CFM	2000	2089
SF RPM	-	HIGH
RA CFM	1500	1565
OA CFM	500	524
RL Voltage	-	205.3
RL Amperage	-	4.48
SF Rotation	-	CW
RA Damper Position	-	FULL OPEN
Min OA Damper Position	-	2"
Min OA Damper Type	-	MANUAL
OA Enthalpy Setpt	-	N/A

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.31"
Fan Suction SP	-	-0.48"
Fan Discharge SP	-	0.33"
Total ESP	-	0.64"
Fan Total SP	-	0.81"

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

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Project:11-27-23 PENN STATION - BRUNSWICK, OH

AHU/RTU



Diffuser Supply (GRD)

RTU1/DINING

Asset											
Asset Name	Location	Type	MFG	Size	Model Num	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
RTU1-SGRD1	DINING	4-WAY	NA	10	NA	300	1	362	420	316	105.3
RTU1-SGRD2	DINING	4-WAY	NA	10	NA	300	1	237	256	300	100.0
RTU1-SGRD3	DINING	4-WAY	NA	10	NA	300	1	257	288	326	108.7
RTU1-SGRD4	DINING	4-WAY	NA	10	NA	300	1	251	273	307	102.3
RTU1-SGRD5	DINING	4-WAY	NA	10	NA	250	1	255	273	268	107.2
RTU1-SGRD6	DINING	LINEAR	NA	10	NA	300	1	118	269	319	106.3
RTU1-SGRD7	DINING	4-WAY	NA	10	NA	250	1	306	332	253	101.2
Total						2000		1786	2111	2089	104.45%

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Project: 11-27-23 PENN STATION - BRUNSWICK, OH

System/Unit: AHU/RTU



Asset: RTU2

AREA:BOH

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	5623J04151
Model Num	NA	KGB060S4DH5Y
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	16X16
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NOT ACCESSIBLE
Frame	-	NOT ACCESSIBLE
Horsepower	-	0.8
Motor Rpm	-	1575
Phase	-	1
Rated Voltage	-	208
Rated Amperage	-	4.8

Test Data		
	Design	Actual
SF CFM	2000	2047
SF RPM	-	HIGH
RA CFM	1500	1498
OA CFM	500	549
RL Voltage	-	205.4
RL Amperage	-	4.25
SF Rotation	-	CW
RA Damper Position	-	FULL OPEN
Min OA Damper Position	-	3"
Min OA Damper Type	-	MANUAL
OA Enthalpy Setpt	-	N/A

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.22"
Fan Suction SP	-	-0.41"
Fan Discharge SP	-	0.35"
Total ESP	-	0.57"
Fan Total SP	-	0.76"

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

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Project:11-27-23 PENN STATION - BRUNSWICK, OH

AHU/RTU



Diffuser Supply (GRD)

RTU2/BOH

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	DINING	4-WAY	10"	400	1	268	335	371	92.8
SGRD2	HALL	4-WAY	10"	300	1	185	241	327	109.0
SGRD3	WOMENS RR	4-WAY	6"	70	1	98	107	70	100.0
SGRD4	MENS RR	4-WAY	6"	130	1	93	123	124	95.4
SGRD5	BOH	4-WAY	10"	200	1	276	328	208	104.0
SGRD6	PREP AREA	4-WAY	10"	300	1	280	357	308	102.7
SGRD7	PREP AREA	4-WAY	10"	300	1	249	303	311	103.7
SGRD8	KITCHEN	4-WAY PERF	10"	300	1	252	316	328	109.3
Total				2000		1701	2110	2047	102.35%

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Project: 11-27-23 PENN STATION - BRUNSWICK, OH

System/Unit: AHU/RTU



Asset: RTU3

AREA:SERVING

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	56234J09488
Model Num	NA	KGB060S4DH5Y
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	16X16
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	Actual
Motor MFG	-	NOT ACCESSIBLE
Frame	-	NOT ACCESSIBLE
Horsepower	-	0.8
Motor Rpm	-	1575
Phase	3	1
Rated Voltage	208	208
Rated Amperage	-	4.8

Test Data		
	Design	Actual
SF CFM	2000	1978
SF RPM	-	HIGH
RA CFM	1500	1461
OA CFM	500	517
RL Voltage	-	207.7
RL Amperage	-	3.97
SF Rotation	-	CW
RA Damper Position	-	FULL OPEN
Min OA Damper Position	-	3"
Min OA Damper Type	-	MANUAL
OA Enthalpy Setpt	-	N/A

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.24"
Fan Suction SP	-	-0.37"
Fan Discharge SP	-	0.64"
Total ESP	-	0.88"
Fan Total SP	-	1.01"

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

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Project:11-27-23 PENN STATION - BRUNSWICK, OH

AHU/RTU



Diffuser Supply (GRD)

RTU3/SERVING

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	SERVING	LINEAR	10"	350	1	207	357	328	93.7
SGRD2	SERVING	LINEAR	10"	350	1	248	387	368	105.1
SGRD3	SERVING	LINEAR	10"	350	1	270	443	320	91.4
SGRD4	HOOD 1	ACPSP	12"	600	1	292	436	598	99.7
SGRD5	HOOD 3	ACPSP	10"	350	1	232	343	364	104.0
Total				2000		1249	1966	1978	98.9%

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Project: 11-27-23 PENN STATION - BRUNSWICK, OH

System/Unit: FAN - Exhaust



Asset: EF1

AREA:MENS RR

Unit Data		
	Design	Actual
MFG	NA	GREENHECK
Model Num	NA	SP-150-QD
Serial Num	-	167303538-0041
Type	CEILING	CEILING

Motor Data		
	Design	Actual
Motor MFG	-	GREENHECK
Frame	-	NL
Horsepower	-	NL
Motor Rpm	-	1050
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	1.8
Service Factor	-	1

Test Data		
	Design	Actual
CFM	150	158
Fan RPM	-	1050
Fan Rotation	-	CW
Motor RPM	-	1050
System SetPt	-	FULL SPEED
RL Voltage	-	117.1
RL Amperage	-	1.9

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Project: 11-27-23 PENN STATION - BRUNSWICK, OH

System/Unit: FAN - Exhaust



Asset: EF2

AREA:WOMENS RR

Unit Data		
	Design	Actual
MFG	NA	GREENHECK
Model Num	NA	SP-B90-QD
Serial Num	-	165782930-0037
Type	CEILING	CEILING

Motor Data		
	Design	Actual
Motor MFG	-	GREENHECK
Frame	-	NL
Horsepower	-	NL
Motor Rpm	-	700
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	0.19
Service Factor	-	1

Test Data		
	Design	Actual
CFM	75	70
Fan RPM	-	700
Fan Rotation	-	CW
Motor RPM	-	700
System SetPt	-	FULL SPEED
RL Voltage	-	117.3
RL Amperage	-	0.19

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Project: 11-27-23 PENN STATION - BRUNSWICK, OH

System/Unit: FAN - Exhaust



Asset: KEF1

AREA:HOOD 1 GRILL

Unit Data		
	Design	Actual
MFG	CAPTIVEAIRE	ECON AIR
Model Num	DU85HFA	EADU85H
Serial Num	-	6113263
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	Actual
Motor MFG	-	TELCO GREEN
Frame	-	NL
Horsepower	0.750	0.75
Motor Rpm	-	1800
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	8.9
Service Factor	-	1

Test Data		
	Design	Actual
CFM	1250	1256
Fan RPM	1240	1116
Fan Rotation	-	CCW
Motor RPM	-	1116
System SetPt	-	62%
RL Voltage	-	117.6
RL Amperage	-	5.13
Total ESP	1.150"	0.85"
Fan Inlet SP	-	-0.85"
Fan Discharge SP	-	ATM

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Project: 11-27-23 PENN STATION - BRUNSWICK, OH

System/Unit: FAN - Exhaust



Asset: KEF2

AREA:HOOD 2 OVEN

Unit Data		
	Design	Actual
MFG	CAPTIVEAIRE	ECON AIR
Model Num	DU33HFA	EADU33H
Serial Num	-	6113263
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	Actual
Motor MFG	-	TELCO GREEN
Frame	-	NL
Horsepower	0.333	0.333
Motor Rpm	-	1800
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	4.3
Service Factor	-	1

Test Data		
	Design	Actual
CFM	600	595
Fan RPM	1296	1224
Fan Rotation	-	CCW
Motor RPM	-	1224
System SetPt	-	68%
RL Voltage	-	117.6
RL Amperage	-	1.85
Total ESP	0.600"	0.53"
Fan Inlet SP	-	-0.53"
Fan Discharge SP	-	ATM

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Project: 11-27-23 PENN STATION - BRUNSWICK, OH

System/Unit: FAN - Exhaust



Asset: KEF3

AREA:HOOD 3 FRY

Unit Data		
	Design	Actual
MFG	CAPTIVEAIRE	ECON AIR
Model Num	DU85HFA	EADU85H
Serial Num	-	6113263
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	Actual
Motor MFG	-	TELCO GREEN
Frame	-	NL
Horsepower	0.750	0.75
Motor Rpm	-	1800
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	8.9
Service Factor	-	1

Test Data		
	Design	Actual
CFM	850	846
Fan RPM	1210	1332
Fan Rotation	-	CCW
Motor RPM	-	1332
System SetPt	-	74%
RL Voltage	-	118.0
RL Amperage	-	8.21
Total ESP	1.200"	1.61"
Fan Inlet SP	-	-1.61"
Fan Discharge SP	-	ATM

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National TAB

Project: 11-27-23 PENN STATION - BRUNSWICK, OH

System/Unit: FAN - Supply



Asset: MUA1

AREA:

Unit Data		
	Design	Actual
MFG	CAPTIVEAIRE	ECON AIR
Model Num	A1-D.250-15D	EA1-D.250-15D
Serial Num	-	6113263
Type	MUA	MUA
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	Actual
Motor MFG	-	TECO
Frame	-	145T
Horsepower	1.5	1.5
Motor Rpm	-	1740
Phase	3	3
Voltage (rated)	208	230
Amperage (rated)	-	4.03
Service Factor	-	1.15

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	-	0.386"

Test Data		
	Design	Actual
CFM	1630	1616
SF RPM	1895	1780
Motor RPM	-	1780
SF System SetPt	-	61.4HZ
RL Voltage	-	157 VFD
RL Amperage	-	3.6 VFD
Total ESP	-	0.57"
Fan Discharge SP	-	0.57"

General		
	Design	Actual
Fan Rotation Correct	-	YES

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National TAB

Project: 11-27-23 PENN STATION - BRUNSWICK, OH

System/Unit: Kitchen Hood Type I



Asset: HD1

AREA:

Unit Data		
	Design	Actual
MFG	CAPTIVEAIRE	ECON AIR
Model Num	3650 BD-2 246 ACPSP	3650 ELPX-2
Job / Serial Num	-	6113263
Type	TYPE I LOW PROXIMITY	TYPE I LOW PROXIMITY
Hood length	84"	84"
Hood Width	36"	36"
Supply Plenum Type	-	ACPSP
Supply Plenum Width	14"	14"
Supply Plenum Length	84"	84"

Test Data Exhaust		
	Design	Actual
Filter Type	CAPTRATE SOLO	CAPTRATE SOLO
Filter Size 1	16X16	16X16
Filter Qty 1	5	5
Filter AK factor size 1	1.62	1.62
Filter Total AK Area	8.1	8.1
Filter1 FPM	-	161
Filter2 FPM	-	166
Filter3 FPM	-	153
Filter4 FPM	-	150
Filter5 FPM	-	149
Filter Ave FPM(corr)	-	155
CFM	1250	1256

Cooking Equipment		
	Design	Actual
Item 1	-	GRIDDLE

Test Data Supply		
	Design	Actual
Total AK Area	8.16	8.16
Kv factor (Vel)	0.90	0.90
Num of Readings	-	7
Reading1 FPM	-	141
Reading2 FPM	-	151
Reading3 FPM	-	1341
Reading4 FPM	-	151
Reading5 FPM	-	140
Reading6 FPM	-	139
Reading7 FPM	-	123
Ave FPM(corr)	-	139
CFM	1000	1021

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National TAB

Project: 11-27-23 PENN STATION - BRUNSWICK, OH

System/Unit: Kitchen Hood Type I



Asset: HD2

AREA:

Unit Data		
	Design	Actual
MFG	CAPTIVEAIRE	ECON AIR
Model Num	4412 QUIZNO	4412 QUIZNO
Job / Serial Num	-	6113263
Type	TYPE I LOW PROXIMITY	TYPE I LOW PROXIMITY
Hood length	21.25"	21.25"
Hood Width	44"	44"

Test Data Exhaust		
	Design	Actual
Filter Type	SS BAFFLE	SS BAFFLE
Filter Size 1	10X20	10X20"
Filter Qty 1	2	2
Filter AK factor size 1	1.2	1.2
Filter Total AK Area	-	2.4
Filter1 FPM	-	251
Filter2 FPM	-	245
Filter Ave FPM(corr)	-	248
CFM	600	595

Cooking Equipment		
	Design	Actual
Item 1	-	CONVEYOR OVEN

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National TAB

Project: 11-27-23 PENN STATION - BRUNSWICK, OH

System/Unit: Kitchen Hood Type I



Asset: HD3

AREA:

Unit Data		
	Design	Actual
MFG	CAPTIVEAIRE	ECON AIR
Model Num	3650 BD-2 246 ACPSP	3650 ELPX-2
Job / Serial Num	-	6113263
Type	TYPE I LOW PROXIMITY	TYPE I LOW PROXIMITY
Hood length	50"	50"
Hood Width	36"	36"
Supply Plenum Type	-	ACPSP
Supply Plenum Width	14"	14"
Supply Plenum Length	50"	50"

Test Data Supply		
	Design	Actual
Total AK Area	4.86	4.86
Kv factor (Vel)	0.90"	0.90
Num of Readings	-	4
Reading1 FPM	-	146
Reading2 FPM	-	150
Reading3 FPM	-	125
Reading4 FPM	-	122
Ave FPM(corr)	-	136
CFM	630	595

Test Data Exhaust		
	Design	Actual
Filter Type	CAPTRATE SOLO	CAPTRATE SOLO
Filter Size 1	16X16	16X16
Filter Qty 1	3	3
Filter AK factor size 1	1.62	1.62
Filter Total AK Area	4.86	4.86
Filter1 FPM	-	183
Filter2 FPM	-	171
Filter3 FPM	-	170
Filter Ave FPM(corr)	-	174
CFM	850	846

Cooking Equipment		
	Design	Actual
Item 1	-	2X FRYER
Item 2	-	FRY WARMING TRAY

Completed By: Tyler Youells on 11/30/2023

HVAC PLAN
1/4" = 1'-0" NORTH

