

**Report By:**

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**Report: PRELIM TAB REPORT  
Function: Test, Adjust, & Balance  
Date: 12/06/2022**

**PROJECT  
12-19 PENN STATION - DALLAS, NC**

701 WEST TRADE ST

DALLAS, NC 28034

**Client**

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

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Project: 12-19 PENN STATION - DALLAS, NC

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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.

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System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU1

AREA:DINING

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	
Model Num	LGH090H	LGH090H
Type	RTU	
Configuration	VERTICAL	
Num OA Filters 1	-	
OA Filter Size 1	-	
Num Final Filter 1	-	
Final Filter Size 1	-	
Num Final Filter 2	-	
Final Filter Size 2	-	

Test Data		
	Design	Actual
SF CFM	300	
SF RPM	-	
RA CFM	2400	
OA CFM	600	
RL Voltage	-	
RL Amperage	-	
SF Rotation	-	
RA Damper Position	-	
Min OA Damper Position	-	
Min OA Damper Type	-	
OA Enthalpy Setpt	-	

Motor Data		
	Design	Actual
Motor MFG	-	
Frame	-	
Horsepower	-	
Motor Rpm	-	
Phase	3	
Rated Voltage	208	
Rated Amperage	-	

Performance Data		
	Design	Actual
MA Plenum SP	-	
Fan Suction SP	-	
Fan Discharge SP	-	
Total ESP	1.0"	
Fan Total SP	-	

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

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

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## AHU/RTU



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### Diffuser Supply (GRD)

#### RTU1/DINING

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	DINING	L1	10"	600					-
SGRD2	DINING	L1	10"	350					-
SGRD3	DINING	L1	10"	350					-
SGRD4	DINING	L1	10"	350					-
SGRD5	DINING	L1	10'	350					-
SGRD6	DINING	CD2	10"	300					-
SGRD7	DINING	CD1	10"	350					-
SGRD8	DINING	CD1	10"	350					-

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System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU2

AREA:SERVING

Unit Data		
	Design	Actual
MFG	LENNOX	LENNOX
Serial Num	-	
Model Num	LGH090H	LGH090H
Type	RTU	
Configuration	VERTICAL	
Num OA Filters 1	-	
OA Filter Size 1	-	
Num Final Filter 1	-	
Final Filter Size 1	-	
Num Final Filter 2	-	
Final Filter Size 2	-	

Test Data		
	Design	Actual
SF CFM	3000	
SF RPM	-	
RA CFM	2400	
OA CFM	600	
RL Voltage	-	
RL Amperage	-	
SF Rotation	-	
RA Damper Position	-	
Min OA Damper Position	-	
Min OA Damper Type	-	
OA Enthalpy Setpt	-	

Motor Data		
	Design	Actual
Motor MFG	-	
Frame	-	
Horsepower	-	
Motor Rpm	-	
Phase	3	
Rated Voltage	208	
Rated Amperage	-	

Performance Data		
	Design	Actual
MA Plenum SP	-	
Fan Suction SP	-	
Fan Discharge SP	-	
Total ESP	1.0"	
Fan Total SP	-	

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

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

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## AHU/RTU



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**Diffuser Supply (GRD)**

**RTU2/SERVING**

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	SERVICE	L1	10"	375					-
SGRD2	SERVICE	L1	10"	375					-
SGRD3	SERVICE	CD1	10"	350					-
SGRD4	SERVICE	CD1	10"	350					-
SGRD5	SERVICE	L1	10"	375					-
SGRD6	SERVICE	CD1	10"	350					-
SGRD7	SERVICE	L1	10"	375					-
SGRD8	SERVICE	CD	10"	350					-
SGRD9	RESTROOM	CD3	10"	50					-
SGRD10	RESTROOM	CD3	10"	50					-

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Project: 12-19 PENN STATION - DALLAS, NC

System/Unit: FAN - Exhaust



Comfort. Under control.

Asset: EF1

AREA:RESTROOM

Unit Data		
	Design	Actual
MFG	NUTONE	NUTONE
Model Num	EZ80N	EZ80N
Serial Num	-	
Type	CEILING	
Configuration	VERTICAL	

Test Data		
	Design	Actual
CFM	75	
Fan RPM	-	
Fan Rotation	-	
Motor RPM	-	
RL Voltage	-	
RL Amperage	-	
Suction ESP	-	
Discharge ESP	-	
Total ESP	0.1"	

Motor Data		
	Design	Actual
Motor MFG	-	
Frame	-	
Horsepower	-	
Motor Rpm	-	
Phase	1	
Voltage (rated)	120	
Amperage (rated)	-	
Service Factor	-	

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

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Project: 12-19 PENN STATION - DALLAS, NC

System/Unit: FAN - Exhaust



Comfort. Under control.

Asset: EF2

AREA:RESTROOM

Unit Data		
	Design	Actual
MFG	NUTONE	NUTONE
Model Num	EZ80N	EZ80N
Serial Num	-	
Type	CEILING	
Configuration	VERTICAL	

Motor Data		
	Design	Actual
Motor MFG	-	
Frame	-	
Horsepower	-	
Motor Rpm	-	
Phase	1	
Voltage (rated)	120	
Amperage (rated)	-	
Service Factor	-	

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

Test Data		
	Design	Actual
CFM	75	
Fan RPM	-	
Fan Rotation	-	
Motor RPM	-	
RL Voltage	-	
RL Amperage	-	
Suction ESP	-	
Discharge ESP	-	
Total ESP	0.1"	

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System/Unit: FAN - Exhaust



Comfort. Under control.

Asset: KEF1

AREA:HOOD1

Unit Data		
	Design	Actual
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	DU85HFA	DU85HFA
Serial Num	-	
Type	UPBLAST	
Configuration	VERTICAL	

Motor Data		
	Design	Actual
Motor MFG	-	
Frame	-	
Horsepower	0.75	
Motor Rpm	-	
Phase	1	
Voltage (rated)	115	
Amperage (rated)	-	
Service Factor	-	

Test Data		
	Design	Actual
CFM	1120	
Fan RPM	1215	
Fan Rotation	-	
Motor RPM	-	
System SetPt	-	
RL Voltage	-	
RL Amperage	-	
Total ESP	1.15"	
Fan Inlet SP	-	
Fan Discharge SP	-	

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System/Unit: FAN - Exhaust



Comfort. Under control.

Asset: KEF2

AREA:HOOD 2

Unit Data		
	Design	Actual
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	DU33HFA	DU33HFA
Serial Num	-	
Type	UPBLAST	
Configuration	VERTICAL	

Motor Data		
	Design	Actual
Motor MFG	-	
Frame	-	
Horsepower	0.33	
Motor Rpm	-	
Phase	1	
Voltage (rated)	115	
Amperage (rated)	-	
Service Factor	-	

Test Data		
	Design	Actual
CFM	700	
Fan RPM	1360	
Fan Rotation	-	
Motor RPM	-	
System SetPt	-	
RL Voltage	-	
RL Amperage	-	
Total ESP	0.6"	
Fan Inlet SP	-	
Fan Discharge SP	-	

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System/Unit: FAN - Exhaust



Comfort. Under control.

Asset: KEF3

AREA:HOOD 3

Unit Data		
	Design	Actual
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	DU85HFA	DU85HFA
Serial Num	-	
Type	UPBLAST	
Configuration	VERTICAL	

Motor Data		
	Design	Actual
Motor MFG	-	
Frame	-	
Horsepower	0.75	
Motor Rpm	-	
Phase	1	
Voltage (rated)	115	
Amperage (rated)	-	
Service Factor	-	

Test Data		
	Design	Actual
CFM	833	
Fan RPM	1144	
Fan Rotation	-	
Motor RPM	-	
System SetPt	-	
RL Voltage	-	
RL Amperage	-	
Total ESP	1.15"	
Fan Inlet SP	-	
Fan Discharge SP	-	

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Project: 12-19 PENN STATION - DALLAS, NC

System/Unit: FAN - Supply



Comfort. Under control.

Asset: MUA1

AREA:KITCHEN

Unit Data		
	Design	Actual
<b>MFG</b>	CAPTIVEAIRE	CAPTIVEAIRE
<b>Model Num</b>	A1--D250-15D	A1--D250-15D
<b>Serial Num</b>	-	
<b>Type</b>	MUA	
<b>Configuration</b>	VERTICAL	

Motor Data		
	Design	Actual
<b>Motor MFG</b>	-	
<b>Frame</b>	-	
<b>Horsepower</b>	1.5	
<b>Motor Rpm</b>	-	
<b>Phase</b>	3	
<b>Voltage (rated)</b>	208	
<b>Amperage (rated)</b>	-	
<b>Service Factor</b>	-	

Gas Heat		
	Design	Actual
<b>Heater Operates (y/n)</b>	-	
<b>Flame Status (pass/fail)</b>	-	
<b>Inlet Air Temp SetPt</b>	55	
<b>Discharge Air Temp SetPt</b>	60	
<b>Air Flow Switch SP Actual</b>	-	

Test Data		
	Design	Actual
<b>CFM</b>	1650	
<b>SF RPM</b>	1855	
<b>Motor RPM</b>	-	
<b>SF System SetPt</b>	-	
<b>RL Voltage</b>	-	
<b>RL Amperage</b>	-	
<b>Total ESP</b>	-	
<b>Fan Discharge SP</b>	-	

General		
	Design	Actual
<b>Fan Rotation Correct</b>	-	

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Project: 12-19 PENN STATION - DALLAS, NC

## System/Unit: Kitchen Hood Type I



Comfort. Under control.

Asset: HD1

AREA:

Unit Data		
	Design	Actual
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	3650BD-2	3650BD-2
Job / Serial Num	-	
Type	TYPE I LOW PROXIMITY	
Hood length	72"	
Hood Width	36	
Supply Plenum Type	-	
Supply Plenum Width	14"	
Supply Plenum Length	72"	

Test Data Exhaust		
	Design	Actual
Filter Type	CAPTRATE SOLO	
Filter Size 1	16X16	
Filter Size 2	-	
Filter Qty 1	4	
Filter Qty 2	-	
Filter AK factor size 1	1.62	
Filters AK factor size 2	-	
Filter Total AK Area	6.48	
Filter1 FPM	-	
Filter2 FPM	-	
Filter3 FPM	-	
Filter4 FPM	-	
Filter5 FPM	-	
Filter6 FPM	-	
Filter7 FPM	-	
Filter8 FPM	-	
Filter9 FPM	-	
Filter10 FPM	-	
Filter11 FPM	-	
Filter12 FPM	-	
Filter Ave FPM(corr)	-	
CFM	1120	

Cooking Equipment		
	Design	Actual
Item 1	-	
Item 2	-	
Item 3	-	
Item 4	-	
Item 5	-	

Test Data Supply		
	Design	Actual
Total AK Area	7	
Kv factor (Vel)	0.89	
Num of Readings	-	
Reading1 FPM	-	
Reading2 FPM	-	
Reading3 FPM	-	
Reading4 FPM	-	
Reading5 FPM	-	
Reading6 FPM	-	
Reading7 FPM	-	
Reading8 FPM	-	
Reading9 FPM	-	
Reading10 FPM	-	
Reading11 FPM	-	
Reading12 FPM	-	
Reading13 FPM	-	
Reading14 FPM	-	
Ave FPM(corr)	-	
CFM	1000	

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Project: 12-19 PENN STATION - DALLAS, NC

## System/Unit: Kitchen Hood Type I



Comfort. Under control.

Asset: HD2

AREA:

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

Test Data Exhaust		
	Design	Actual
Filter Type	SS BAFFLE	
Filter Size 1	20X10	
Filter Size 2	-	
Filter Qty 1	2	
Filter Qty 2	-	
Filter AK factor size 1	-	
Filters AK factor size 2	-	
Filter Total AK Area	-	
Filter1 FPM	-	
Filter2 FPM	-	
Filter3 FPM	-	
Filter4 FPM	-	
Filter5 FPM	-	
Filter6 FPM	-	
Filter7 FPM	-	
Filter8 FPM	-	
Filter9 FPM	-	
Filter10 FPM	-	
Filter11 FPM	-	
Filter12 FPM	-	
Filter Ave FPM(corr)	-	
CFM	700	

Cooking Equipment		
	Design	Actual
Item 1	-	
Item 2	-	

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Project: 12-19 PENN STATION - DALLAS, NC

## System/Unit: Kitchen Hood Type I



Comfort. Under control.

Asset: HD3

AREA:

Unit Data		
	Design	Actual
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	3650BD-2	3650BD-2
Job / Serial Num	-	
Type	LOW PROXIMITY	
Hood length	50"	
Hood Width	36"	
Supply Plenum Type	-	
Supply Plenum Width	50"	
Supply Plenum Length	14"	

Test Data Exhaust		
	Design	Actual
Filter Type	CAPTRATE SOLE	
Filter Size 1	16X16	
Filter Size 2	-	
Filter Qty 1	3	
Filter Qty 2	-	
Filter AK factor size 1	1.62	
Filters AK factor size 2	-	
Filter Total AK Area	4.86	
Filter1 FPM	-	
Filter2 FPM	-	
Filter3 FPM	-	
Filter4 FPM	-	
Filter5 FPM	-	
Filter6 FPM	-	
Filter7 FPM	-	
Filter8 FPM	-	
Filter9 FPM	-	
Filter10 FPM	-	
Filter11 FPM	-	
Filter12 FPM	-	
Filter Ave FPM(corr)	-	
CFM	833	

Cooking Equipment		
	Design	Actual
Item 1	-	
Item 2	-	
Item 3	-	
Item 4	-	
Item 5	-	

Test Data Supply		
	Design	Actual
Total AK Area	4.8	
Kv factor (Vel)	0.89	
Num of Readings	-	
Reading1 FPM	-	
Reading2 FPM	-	
Reading3 FPM	-	
Reading4 FPM	-	
Reading5 FPM	-	
Reading6 FPM	-	
Reading7 FPM	-	
Reading8 FPM	-	
Reading9 FPM	-	
Reading10 FPM	-	
Reading11 FPM	-	
Reading12 FPM	-	
Reading13 FPM	-	
Reading14 FPM	-	
Ave FPM(corr)	-	
CFM	650	

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