Report By:

National TAB
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Report: TAB REPORT

Function: Test, Adjust, & Balance

Date: 05/30/2024

PROJECT

06-03-24 CAVA HOUSTON, TX (GREENHOUSE RD)

1641 GREENHOUSE RD

HOUSTON, TX 77084

Client

CAVA

702 H ST NW

2nd floor

Washington, DC 20001

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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Project: 06-03-24 CAVA HOUSTON, TX (GREENHOUSE RD)

System/Unit: AHU/RTU

Asset: RTU1 AREA:

Unit Data		
	Design	**Actual**
MFG	TRANE	TRANE
Serial Num	-	230950003MX
Model Num	YSJ150A3	ECC150A3E0A3YXA
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	16x16.5"
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON MOTORS
Frame	-	56
Horsepower	3	3.0
Motor Rpm	-	1725
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	8.7

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	5.5"
Motor Bore Size	-	7/8"
Motor Sheave SetPt	-	0 TURNS OUT
Fan Sheave Size	-	9"
Fan Sheave Bore	-	1"
Belt CL Distance	-	29.75"
Num of Belts	-	1
Belt Size	-	B-66
Belt Alignment	-	GOOD

Test Data		
	Design	**Actual**
SF CFM	4500	5276
SF RPM	-	
RA CFM	3825	4784
OA CFM	675	580
RL Voltage	-	
RL Amperage	-	
SF Rotation	-	
RA Damper Position	-	
Min OA Damper Position	-	
Min OA Damper Type	-	
OA Enthalpy Setpt	-	

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.83"
Fan Suction SP	-	-1.34"
Fan Discharge SP	-	0.56"
Total ESP	1.20"	1.39
Fan Total SP	-	1.9

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

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Project:06-03-24 CAVA HOUSTON, TX (GREENHOUSE RD)

AHU/RTU

Diffuser Supply (GRD)

RTU1/

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
SGRD1	DINING	R1	20X6	350	0.6365	306			-
SGRD2	DINING	R1	20X6	350	0.6365	28			-
SGRD3	DINING	R1	20X6	350	0.6365	473			-
SGRD4	DINING	R1	20X6	350	0.6365	200			-
SGRD5	DINING	R1	20X6	350	0.6365	523			-
SGRD6	DINING	R1	20X6	350	0.6365	343			-
SGRD7	DINING	R1	20X6	350	0.6365	432			-
SGRD8	DINING	R1	20X6	350	0.6365	542			-
SGRD9	DINING	R1	20X6	350	0.6365	534			-
SGRD10	DINING	R1	20X6	350	0.6365	417			-
SGRD11	DINING	R1	20X6	350	0.6365	516			-
SGRD12	DINING	R1	20X6	350	0.6365	384			-
SGRD13	WOMENS RR	D2	6"	50	1	72			-
SGRD14	HALL	D2	6"	100	1	104			-
SGRD15	MENS RR	D2	6"	50	1	48			-
SGRD16	HALL	D2	6"	100	1	64			-
Total				4500		4986	0	0	0%

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Project: 06-03-24 CAVA HOUSTON, TX (GREENHOUSE RD)

System/Unit: AHU/RTU

Asset: RTU2 AREA:

Unit Data		
	Design	**Actual**
MFG	TRANE	TRANE
Serial Num	-	230950003MX
Model Num	YSJ120A3	ECC120A3E0A3YXA
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	
OA Filter Size 1	-	
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

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

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	6"
Motor Bore Size	-	7/8"
Motor Sheave SetPt	-	0 TURNS OUT
Fan Sheave Size	-	11.5"
Fan Sheave Bore	-	1"
Belt CL Distance	-	20"
Num of Belts	-	1
Belt Size	-	B-66
Belt Alignment	-	GOOD

Test Data		
	Design	**Actual**
SF CFM	3600	
SF RPM	-	920
RA CFM	3350	
OA CFM	250	
RL Voltage	-	210/211/211
RL Amperage	-	6.7/5.0/6.1
SF Rotation	-	
RA Damper Position	-	
Min OA Damper Position	-	
Min OA Damper Type	-	
OA Enthalpy Setpt	-	

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.61
Fan Suction SP	-	-0.89
Fan Discharge SP	-	0.55
Total ESP	1.20"	1.16
Fan Total SP	-	1.44

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

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Project:06-03-24 CAVA HOUSTON, TX (GREENHOUSE RD)

AHU/RTU

Diffuser Supply (GRD)

RTU2/

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
SGRD1	FRONT KITCHEN	L1	10"	340	2.155	144			-
SGRD2	FRONT KITCHEN	L1	10"	340	2.155	118			-
SGRD3	FRONT KITCHEN	L1	10"	340	2.155	134			-
SGRD4	FRONT KITCHEN	L1	10"	340	2.155	205			-
SGRD5	HOOD 1	ACPSP	140X6	780	2.155	166			-
SGRD6	FRONT KITCHEN	L1	10"	255	2.155	127			-
SGRD7	KITCHEN	D1	10"	250	2.155				-
SGRD8	KITCHEN	L1	10"	255	2.155				-
SGRD9	KITCHEN	D1	10"	250	1				-
SGRD10	KITCHEN	D1	10"	300	1				-
SGRD11	OFFICE	D1	8"	150	1				-
Total				3600		894	0	0	0%

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Project: 06-03-24 CAVA HOUSTON, TX (GREENHOUSE RD)

System/Unit: FAN - Exhaust

Asset: EF2 AREA:

Unit Data		
	Design	**Actual**
MFG	GREENHECK	GREENHECK
Model Num	G-080-VG	G-080-VG
Serial Num	-	060PK98016-00/0000701
Type	DOWNBLAST	DOWNBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	JAKEL
Frame	-	NL
Horsepower	0.05	0.05
Motor Rpm	-	1725
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	1.1
Service Factor	-	1

Test Data		
	Design	**Actual**
CFM	250	257
Fan RPM	-	NA
Fan Rotation	-	CCW
Motor RPM	-	NA
System SetPt	-	NA
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	0.3"	
Fan Inlet SP	-	-0.29
Fan Discharge SP	-	

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FAN - Exhaust

Diffuser Ret/Exh (GRD)

EF2/

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
EGRD1	MENS RR	G2	6"	125	1	120		120	96.0
EGRD2	WOMENS RR	G2	6"	125	1	137		137	109.6
Total				250		257	0	257	102.8%

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Project: 06-03-24 CAVA HOUSTON, TX (GREENHOUSE RD)

System/Unit: FAN - Exhaust

Asset: KEF1 AREA:

Unit Data		
	Design	**Actual**
MFG	CAPTVEAIRE	CAPTVEAIRE
Model Num	DU85HFA	DU85HFA
Serial Num	-	6226897
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TELCO
Frame	-	NL
Horsepower	1	1
Motor Rpm	-	1800
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	7.65
Service Factor	-	1

Test Data		
	Design	**Actual**
CFM	2381	
Fan RPM	1567	
Fan Rotation	-	
Motor RPM	-	
System SetPt	-	100%
RL Voltage	-	
RL Amperage	-	
Total ESP	1.0"	
Fan Inlet SP	-	-0.06
Fan Discharge SP	-	

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Project: 06-03-24 CAVA HOUSTON, TX (GREENHOUSE RD)

System/Unit: FAN - Supply

Asset: MUA1 AREA:

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	A1-D.250-15D-MPU	A1-D.250-15D-MPU
Serial Num	-	6226897
Type	MUA	MUA
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TECO WESTINGHOUSE
Frame	-	145T
Horsepower	1	2
Motor Rpm	-	1740
Phase	1	3
Voltage (rated)	115	230
Amperage (rated)	-	5.48
Service Factor	-	1.15

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

Test Data		
	Design	**Actual**
CFM	1976	
SF RPM	2162	
Motor RPM	-	
SF System SetPt	-	
RL Voltage	-	118V
RL Amperage	-	4.2 AMPS
Total ESP	-	0.32
Fan Discharge SP	-	

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

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Project: 06-03-24 CAVA HOUSTON, TX (GREENHOUSE RD)

System/Unit: Kitchen Hood Type I

Asset: HD1 AREA:

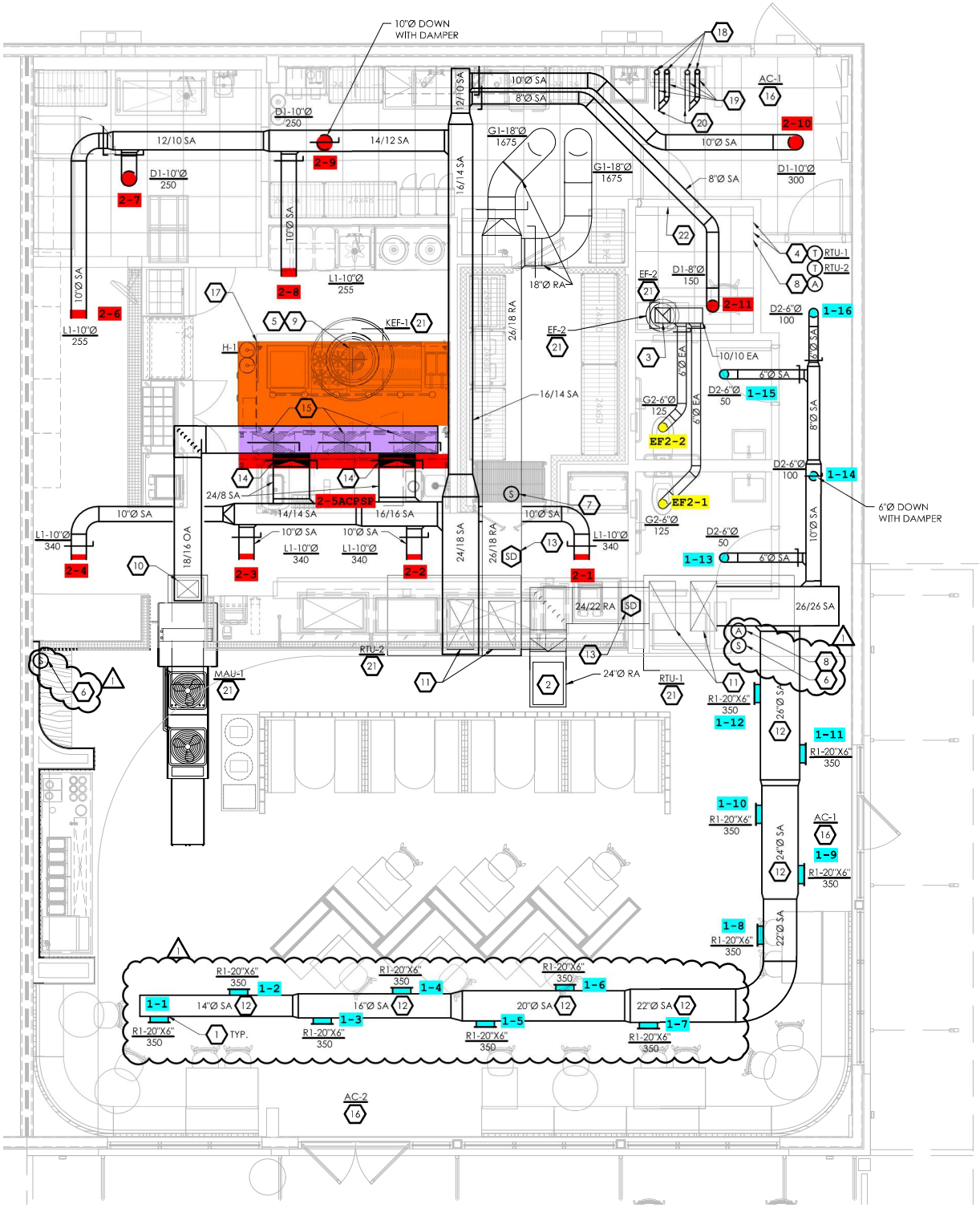
Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	6030 ND-2-ACPSP-F	6030 ND-2-ACPSP-F
Job / Serial Num	-	6226897
Type	TYPE I CANOPY	TYPE I CANOPY
Hood length	127"	127"
Hood Width	60"	60"
Supply Plenum Type	-	PSP
Supply Plenum Width	14"	14"
Supply Plenum Length	140"	140"

Test Data Exhaust		
	Design	**Actual**
Filter Type	CAPTRATE SOLO	CAPTRATE SOLO
Filter Size 1	16X20	16x20
Filter Qty 1	7	7
Filter AK factor size 1	2.08	2.08
Filter Total AK Area	14.56	14.56
Filter1 FPM	-	154
Filter2 FPM	-	151
Filter3 FPM	-	145
Filter4 FPM	-	154
Filter5 FPM	-	149
Filter6 FPM	-	129
Filter7 FPM	-	139
Filter Ave FPM(corr)	-	145
CFM	2381	2111

Cooking Equipment		
	Design	**Actual**
Item 1	-	Oven
Item 2	-	Stove
Item 3	-	Griddle
Item 4	-	Fryer

Test Data Supply		
	Design	**Actual**
Total AK Area	13.61	13.61
Kv factor (Vel)	0.89	0.89
Num of Readings	-	11
Reading1 FPM	-	153
Reading2 FPM	-	157
Reading3 FPM	-	158
Reading4 FPM	-	176
Reading5 FPM	-	141
Reading6 FPM	-	192
Reading7 FPM	-	199
Reading8 FPM	-	218
Reading9 FPM	-	184
Reading10 FPM	-	193
Reading11 FPM	-	193
Ave FPM(corr)	-	178
CFM	1976	2156

LANDLORD SHALL BE RESPONSIBLE FOR ALL ROOFTOP PACKAGED UNITS (RTU-1 & RTU-2) ASSOCIATED WORK INCLUDING PROVIDING AND INSTALLING UNIT, STRUCTURAL ANGLE/SUPPORTS, ROOF CURB, DUCT DROPS, ELECTRICAL WIRING, GAS PIPING AND STARTUP/COMMISSIONING.



1 M101 MECHANICAL PLAN

1/4" = 1'-0"