Report By:

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

Report: TAB REPORT

Function: Test, Adjust, & Balance

Date: 06/20/2024

PROJECT

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

7017 Hwy 6 N

HOUSTON, TX 77084

Client

CAVA

702 H ST NW

2nd floor

Washington, DC 20001

National TAB

Project: 06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

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) 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.

Issue List

- Hood end panel not installed
- Hood not mounted flush against walls
- KEF 1 hinge kit seal not installed.
- MUA not cooling
- MUA VFD missing cat 5 to control panel.
- Room temp sensor installed next to hood.
- RTU 1 blower motor current imbalance
- RTU 1 gas leak
- RTU 1 gas not connected.
- RTU 1 heat exhaust vent mesh cover not installed
- RTU 2 gas leak
- RTU 2 gas not connected.
- RTU 2 heat exhaust vent mesh cover not installed

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

Project Issue Information

Issue Name :	Hood end panel not installed		
Description :	Hood end panel not installed.		
Created By :	National TAB	**Assigned To :**	National TAB - Will Turnbough
Status :	Open		
Priority :	High	**Asset Tag :**	HD1
Originated Date :	06/26/2024 - Cody Collett - National TAB		

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

Project Issue Information

Issue Name :	Hood not mounted flush against walls		
Description :	The side of the hood have between 1/2" and 1" gaps on left and right sides of the hood. Back of the hood is not caulked and has greater than 1/8 inch space from the wall in some sections.		
Created By :	National TAB	**Assigned To :**	National TAB - Will Turnbough
Status :	Open		
Priority :	Medium	**Asset Tag :**	HD1
Originated Date :	06/27/2024 - Cody Collett - National TAB		

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Project Issue Information

Issue Name : KEF 1 hinge kit seal not installed.

Description : KEF 1 hinge kit seal not installed. Airflow leakage from lack of seal. KEF 1 unable to reach design cfm, currently at 81% of design cfm.

Created By :	National TAB	**Assigned To :**	National TAB - Will Turnbough
Status :	Open		
Priority :	High	**Asset Tag :**	KEF1
Originated Date :	06/25/2024 - Cody Collett - National TAB		

Project Issue File Details

IMG_0665
06/25/2024

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

Project Issue Information

Issue Name :	MUA not cooling		
Description :	MUA HMI displays running in cool but air exiting the PSP is hot.		
Created By :	National TAB	**Assigned To :**	National TAB - Will Turnbough
Status :	Open		
Priority :	Urgent	**Asset Tag :**	MUA1
Originated Date :	06/25/2024 - Cody Collett - National TAB		

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

Project Issue Information

Issue Name :	MUA VFD missing cat 5 to control panel.		
Description :	MUA VFD missing cat 5 to control panel. MUA VFD missing cat5 to MUA control board.		
Created By :	National TAB	**Assigned To :**	National TAB - Will Turnbough
Status :	Open		
Priority :	Urgent	**Asset Tag :**	MUA1
Originated Date :	06/25/2024 - Cody Collett - National TAB		

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

Project Issue Information

Issue Name :	Room temp sensor installed next to hood.		
Description :	Room temp sensor installed next to hood making it an inaccurate temp source during normal operations.		
Created By :	National TAB	**Assigned To :**	National TAB - Will Turnbough
Status :	Open		
Priority :	High	**Asset Tag :**	
Originated Date :	06/25/2024 - Cody Collett - National TAB		

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

Project Issue Information

Issue Name :	RTU 1 blower motor current imbalance		
Description :	RTU 1 current imbalance between leg 1 and leg 2 Amps 3.36/2.73/2.29		
Created By :	National TAB	**Assigned To :**	National TAB - Will Turnbough
Status :	Open		
Priority :	High	**Asset Tag :**	RTU1
Originated Date :	06/26/2024 - Cody Collett - National TAB		

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

Project Issue Information

Issue Name :	RTU 1 gas leak		
Description :	RTU 1 strong gas odor at the RTU on the roof during windy conditions after gas was connected. Gas turned of by TAB team.		
Created By :	National TAB	**Assigned To :**	National TAB - Will Turnbough
Status :	Open		
Priority :	High	**Asset Tag :**	RTU1
Originated Date :	06/26/2024 - Cody Collett - National TAB		

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

Project Issue Information

Issue Name :	RTU 1 gas not connected.		
Description :	RTU 1 gas not connected. 06/26/2024 Gas connected but is now shut off due to gas leak.		
Created By :	National TAB	**Assigned To :**	National TAB - Will Turnbough
Status :	Pending		
Priority :	High	**Asset Tag :**	RTU1
Originated Date :	06/25/2024 - Cody Collett - National TAB		

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

Project Issue Information

Issue Name :	RTU 1 heat exhaust vent mesh cover not installed		
Description :	RTU 1 heat exhaust vent mesh cover not installed.		
Created By :	National TAB	**Assigned To :**	National TAB - Will Turnbough
Status :	Open		
Priority :	Medium	**Asset Tag :**	RTU1
Originated Date :	06/26/2024 - Cody Collett - National TAB		

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

Project Issue Information

Issue Name :	RTU 2 gas leak		
Description :	RTU 2 strong gas odor at the RTU on the roof during windy conditions after gas was connected. Gas turned of by TAB team.		
Created By :	National TAB	**Assigned To :**	National TAB - Will Turnbough
Status :	Open		
Priority :	High	**Asset Tag :**	RTU2
Originated Date :	06/26/2024 - Cody Collett - National TAB		

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

Project Issue Information

Issue Name :	RTU 2 gas not connected.		
Description :	RTU 2 gas not connected. 06/26/2024 Gas connected but is now shut off due to gas leak.		
Created By :	National TAB	**Assigned To :**	National TAB - Will Turnbough
Status :	Pending		
Priority :	High	**Asset Tag :**	RTU2
Originated Date :	06/25/2024 - Cody Collett - National TAB		

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

Project Issue Information

Issue Name :	RTU 2 heat exhaust vent mesh cover not installed		
Description :	RTU 2 heat exhaust vent mesh cover not installed.		
Created By :	National TAB	**Assigned To :**	National TAB - Will Turnbough
Status :	Open		
Priority :	Medium	**Asset Tag :**	RTU2
Originated Date :	06/26/2024 - Cody Collett - National TAB		

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	3400	3279	3050	2905	350	374	10.3%	11.4%						
RTU-2	DINING	4000	3908	3350	3202	650	706	16.3%	18.1%						
MUA-1	COOKLINE									1976	1780				
KEF-1	KITCHEN HD											2381	1936		
EF-2	RESTROOM													125	126
EF-3	RESTROOM													125	122
TOTALS		7400	7187	6400	6107	1000	1080			1976	1780	2381	1936	250	248

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	2976	2860
TOTAL EXHAUST	2631	2184
NET AIRFLOW	345	676

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H20)
FRONT	0.035
SIDE	0.026
REAR	0.035
AVERAGE	**0.032**

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:

CheckList List

- FIV - EF'S
- FIV - HVAC DUCTWORK
- FIV - RTU'S
- FIV – HOODS
- FIV – MUA
- FPT - BUILDING PRESSURE AND HOOD CONTAINMENT
- FPT - KEF'S
- FPT - RTU's
- FPT – MUA
- TECH - SITE PICTURES

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

CheckList Information

Name :	FIV - EF'S	**Status :**	Not Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	06/20/2024 - Brianna Biggs - National TAB		

CheckList Item Details

Unit Tag matches the design and submittal MFG and Model	Pass
Comment:	
Each exhaust fan is proper tagged for proper identification with tags sized and placed on the fan for visual ease	Pass
Comment:	
Fans are installed in the correct location and orientation	Pass
Comment:	
All packing, material and debris has been removed from the blower/wheel housing and the motor compartment	Pass
Comment:	
Fan wheels turn easily by hand (turn power off prior to testing)	
Comment:	
Fans grease duct curb top plate is properly transitioned to the fan inlet and flush on top of the curb, sealed to the fan base to prevent leakage	Fail
Comment: KEF 1 unable to meet design cfm, duct leakage at top of curb, no seal present	

Exhaust fans have external disconnects and are connected to allow full hinging of each exhaust fan	Pass
Comment:	
Fan is properly hinged and supported when hinged fully back for grease duct access (for Halton fans, ensure the base mounted disconnect is not hitting the fan base/curb when fully hinged back)	Pass
Comment:	
Grease cups are properly installed and connected to the fan base grease drain to prevent spilling outside of the grease cup	Fail
Comment:	
Exhaust fans are located 5ft from parapet wall and 10ft from any fresh air intake.	
Comment:	

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

CheckList Information

Name :	FIV - HVAC DUCTWORK	**Status :**	Not Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	06/20/2024 - Brianna Biggs - National TAB		

CheckList Item Details

KVS - GREASE DUCT (HOOD SYSTEM)

Grease duct is sized and routed per plan

Comment:

Grease duct is properly supported

Comment:

Grease duct has code required negative pitch from fan inlet back to the hood riser connection

Comment:

Grease duct has required clean-out doors installed, labeled, and accessible for removal/cleaning. Doors are located as required by code

Comment:

Grease duct clean-out doors are secured using tool less fasteners and seal fully when hand tightened

Comment:

Grease duct is centered in the curb and transitions as required to ensure the fan inlet is fully covered by the grease duct opening. Duct top plate flanges to the edges of the curb and is secured and flat so that the fan sits flush and square.

Comment:

Grease duct is wrapped if welded duct, or is double wall round duct?

Comment:

KVS - MUA DUCT (HOOD SYSTEM)

MUA duct is routed and sized as per plan

Comment:

MUA duct is properly supported

Comment:

MUA duct seams are sealed air tight using proper sealant and application for SMACNA pressure rating of duct systems

Comment:

MUA duct is externally insulated and taped to prevent vapor barrier from being breached

Comment:

MUA duct drop box and transitions are done to encourage laminar flow and avoid restrictions

Comment:

Branch take-off's have accessible dampers exposed for the TAB team to adjust each line as necessary

Comment:

Flex duct (if used) is supported and straight with no more than one (1) hard 90 degree elbow and less than 5ft in total length

Comment:

Connection to the hood MUA plenum is secured and foil taped to prevent air leakage

Comment:

RESTROOM DUCT

Restroom duct is routed and sized per plan

Comment:

Restroom duct is properly supported

Comment:

Duct seams are sealed

Comment:

Dampers are accessible to TAB team for balancing

Comment:

Flex duct (if used) is supported and straight with no more than one (1) hard 90 degree elbow and less than 5ft in total length

Comment:

Duct is secured to exhaust register

Comment:

Gravity damper is installed, opens and closes freely, and is sealed to prevent air leakage

Comment:

Duct to curb transition is centered and sized to ensure it covers the entire fan inlet. Curb top plate is flush and secured to the ends of the curb.

Comment:

HVAC DUCT

Kitchen and Dining room duct is routed and sized as per plan

Comment:

Ducts are properly supported

Comment:

Ductwork is externally insulated

Comment:

Duct seams are sealed air tight using proper sealant and application for SMACNA pressure rating of duct systems

Comment:

Ducts are securely insulated as per specificatins and foil taped to prevent air barrier from being breached

Comment:

Takeoffs are installed to serve required terminal diffusers and are equipped with accessible dampers for TAB team access and can be opened or closed fully with no impingements

Comment:

Flex duct (if used) is supported and straight with no more than one (1) hard 90 degree elbow and less than 5ft in total length

Comment:

Takeoff to diffuser is installed securely to prevent slippage and air leakage

Comment:

All diffuser neck or opening sizes are installed as planned

Comment:

Supply and Return duct transitions to top of RTU curb, sized to full width and length of opening and is flashed fully to the sides of the curb.

Comment:

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CheckList Information

Name : FIV - RTU'S **Status :** Not Completed

Assigned Organization : National TAB **Asset :**

Requesting Organization : National TAB

Created Date : 06/20/2024 - Brianna Biggs - National TAB

CheckList Item Details

RTU IDENTIFICATION, ORIENTATION & LOCATION

Each RTU is tagged for proper identification with tags sized and placed on the fan for visual ease	Pass
Comment:	
Identify and ensure the RTU label information and size is correct	Pass
Comment:	
Ensure proper location of unit	Pass
Comment:	
Ensure orientation of curb & RTU is per plan	
Comment:	
Ensure Packing in the blower compartment has been removed	
Comment:	

RTU - INSTALLATION DETAILS

With disconnect switch "off" spin the indoor and outdoor fan wheel's by hand and ensure they spin freely	

Comment:

Ensure Roof Curb is fully flashed by roofing material and secured and curb is level

Comment:

Inspect the interior of the supply heat exchange compartment and return air compartment - validate that the duct is flashed and sealed to the top of the curb to prevent leakage or short cycling

Comment:

Hail guards installed on outdoor condenser coils

Comment:

RTU - ACCESSORIES

Power connected & disconnect installed

Comment:

Gas line connected per specification (size, painting, supports, shut-off valves, traps) Fail

Comment:

RTU 1 and RTU 2 gas line not connected.

OA hood & filters installed

Comment:

Economizer wired to control board

Comment:

Evaporator coil filters are properly installed with specified MERV rating

Comment:

Economizer damper is installed properly

Comment:

Economizer OA temperature / enthalpy sensors installed and wired

Comment:

Thermostat and humidity (if applicable) control wires wired to RTU terminals	

Comment:

Condensate drain installed per specification	Pass

Comment:

Condensate line drains away from unit to a approved roof drain	

Comment:

Belts are tight?	N/A

Comment:

Pulleys aligned?	N/A

Comment:

MERV rated filters are installed and are clean?	

Comment:

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

CheckList Information

Name :	FIV – HOODS	**Status :**	Not Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	06/20/2024 - Brianna Biggs - National TAB		

CheckList Item Details

HOOD INSTALLATION DETAILS

Kitchen hoods tags match design and submitted information	
Comment:	
Kitchen hoods are hung Level using 1/2" threaded rod	
Comment:	
Kitchen hoods are supported using beam clamps and/or Unistrut per required structural and local AHJ requirements	
Comment:	
Kitchen hoods are hung level front to back and side to side	
Comment:	
Kitchen hoods are hung at 80" AFF	
Comment:	
Kitchen Hoods are flush against the wall along the bottom and each of it's side walls.	Fail
Comment:	

Caulk is applied (less than 1/8" thick) from the hood against all wall surfaces or between connecting side to side hoods to prevent grease accumulation inside any crevice.	Fail
Comment:	
There are no penetrations into the hood canopy other than fire system nozzles	Pass
Comment:	
The hood is in "As New" condition with no visible damage, rust, pitting, or other blemishes	
Comment:	
All protective film has been peeled away from the wall or other areas of impingement to assure it can be easily and fully removed prior to cleaning.	
Comment:	
HOOD ACCESSORIES	
End panels are installed	Fail
Comment:	
Hood filters are installed	Pass
Comment:	
Grease cups are installed	Fail
Comment:	
Ceiling Wrappers are installed and the ceiling grid is fixed to the top of the ceiling wrappers	
Comment:	
Hood control panel has been identified and is located as per plan, is accessible, and contains all components and temperature sensors to meet local interlock (normal and abnormal conditions) and heat auto on/off functionality.	Fail
Comment: CAT5 from MUA to control panel not wired at this time.	

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

CheckList Information

Name :	FIV – MUA	**Status :**	Not Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	06/20/2024 - Brianna Biggs - National TAB		

CheckList Item Details

MUA Tag information matches design and submittal criteria	
Comment:	
MUA Fan has a permanent tag for identification located on the unit located and sized for visual ease	Pass
Comment:	
MUA is installed in the proper location and orientation	Pass
Comment:	
MUA intake is a minimum 10ft from any exhaust, roof vent or dirty air source	Pass
Comment:	
Blower compartment and internal heater area is free of packing material, debris, and dirt	
Comment:	
Blower wheel turns freely by hand (turn power off prior to testing)	
Comment:	
All MUA compartment and control doors are fully accessible, minimum 36" clearance for service allowing the doors to fully open without restriction	Fail

Comment:

Final compartment door before drop down opening is restricted by condensate drain.

MUA Electrical disconnect is external to the unit and properly wired	Pass

Comment:

Outdoor air awning is installed and fitted with proper OA mesh filters	Pass

Comment:

Condensate drain is installed (for cooling MUA's) with proper traps, clean-outs, and drain away from the unit to an acceptable roof drain

Comment:

Refrigeration line sets are installed and connected properly with adequate supports per specifications

Comment:

Condenser is installed away from any grease producing exhaust fans and located as per roof plan

Comment:

Condenser's electrical disconnect is external to the unit and properly wired (if applicable)	Pass

Comment:

Condenser hail guards are installed (if applicable)	Pass

Comment:

All Condenser compartment and control doors are fully accessible, minimum 36" clearance for service allowing the doors to fully open without restriction (if applicable)

Comment:

Gas line is installed per specification and properly supported

Comment:

Gas line is installed per specification and properly supported and contains maintenance shut-off valve, trap, and regulator (if line pressure requires it). MUA is equipped with inlet gas pressure gauge to validate incoming gas pressure is suitable

Comment:

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CheckList Information

Name :	FPT - BUILDING PRESSURE AND HOOD CONTAINMENT	**Status :**	Not Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	06/20/2024 - Brianna Biggs - National TAB		

CheckList Item Details

FINAL TESTS

HOOD CAPTURE TEST

List equipment turned on for testing

Comment:

List smoke candle type used

Comment:

Smoke test capture - Perimeter of hood (%)

Comment:

Smoke test capture - Top of cooking surface (%)

Comment:

WITNESS

Date test was completed

Comment:

TAB tech name / Firm

Comment:

Site super name / Firm

Comment:

Owner representative name / Firm (if Applicable)

Comment:

BUILDING PRESSURE

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

Comment:

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CheckList Information

Name : FPT - KEF'S **Status :** Not Completed

Assigned Organization : National TAB **Asset :**

Requesting Organization : National TAB

Created Date : 06/20/2024 - Brianna Biggs - National TAB

CheckList Item Details

Exhaust fans wheel rotation is correct	Pass
Comment:	
TAB firm has balanced the exhaust fans to proper design levels	Fail
Comment: KEF 1 at max fan speed only operates at 81% of design at this time.	
All motor and electrical readings are below the full load rating of each fan	
Comment:	
Exhaust Fans do not have any unusual noise or vibration while operating	
Comment:	
Smoke and Grease from exhaust fans appear to properly elevate above the parapet wall and off the roof.	
Comment:	
Hoods have been started up by the manufacturers rep?	Fail
Comment:	
Hoods free of alarms?	

Comment:

Exhaust fans modulate to high speed when kitchen equipment is on and at cooking temperatures? If not, adjust modulation/offset down.

Comment:

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CheckList Information

Name : FPT - RTU's **Status :** Not Completed

Assigned Organization : National TAB **Asset :**

Requesting Organization : National TAB

Created Date : 06/20/2024 - Brianna Biggs - National TAB

CheckList Item Details

THERMOSTAT PROGRAMMING AND CALIBRATION

Time is correct on the thermostats

Comment:

Occupied Time = 7:30 AM

Comment:

Occupied Heat setpoint = 68

Comment:

Occupied Cooling setpoint = 72

Comment:

Dehumidification Setpoint = 55%

Comment:

Occupied Fan = On

Comment:

Unoccupied Time = 12:00AM

Comment:

Unoccupied Heat setpoint = 60

Comment:

Occupied Cooling setpoint = 80

Comment:

Unoccupied Fan = Auto

Comment:

Actual measured temperature is within +/-1 degree of temperature displayed on thermostat. If not calibrate the sensor

Comment:

Actual measured RH is within +/-3 % of displayed RH at RTU or thermostat. If not calibrate the sensor

Comment:

CONTROL WIRING VALIDATION

Economizer Dry Bulb sensor wired

Comment:

Economizer Dry Bulb sensor operational

Comment:

OCP/OCC terminal wired correctly

Comment:

Thermostat Wired correctly (R,C,Y1,Y2,W1,W2)

Comment:

Humidity Sensor Wired correctly

Comment:

CALIBRATION & PROGRAMMING

RTU OA DB StPt, Reading Accuracy (+/- 2 degrees / 10 minute time to calibrate to actual reading)

Comment:

RTU MAT StPt, Reading Accuracy (+/- 2 degrees / 10 minute time to calibrate to actual reading)

Comment:

RTU MAT Low StPt

Comment:

RTU Low T Lockout

Comment:

Economizer set to 28 BTU/lb enthalpy setpoint.

Comment:

Temperature tests

Outside air temperature / humidity

Comment:

Full cooling LAT/H

Comment:

Full heating LAT/H

Comment:

OUTDOOR AIR / RELIEF DAMPER

If power exhaust installed, set point is higher than the OA damper setpoint

Comment:

If power exhaust installed, open the OA damper above the power exhaust setpoint and ensure that the power exhaust turns on

Comment:

If relief damper is installed, ensure that it is installed properly and can open freely.

Comment:

OCCUPANCY VALIDATION

Place the thermostat in "unoccupied" - Does the OA damper close fully

Comment:

Stage cooling and Heating in "unoccupied" - Does the unit properly stage and does the OA damper remain closed

Comment:

Place the thermostat in "Occupied" - Does the OA damper open to the TAB preset minimum position in High speed

Comment:

Place the thermostat in "Occupied" - Does the OA damper open to the TAB preset minimum position in Low speed (if applicable)

Comment:

06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

CheckList Information

Name :	FPT – MUA	**Status :**	Not Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	06/20/2024 - Brianna Biggs - National TAB		

CheckList Item Details

TAB firm has balanced the MUA to within proper design limits

Comment:

Blower wheel rotation is correct

Comment:

MUA does not have any unusual noise or vibration while operating

Comment:

Motor and electrical measurements are below the full load rating

Comment:

Startup has been completed by the manufacturers rep?

Comment:

Heater tested and is functional?

Comment:

Cooling is tested and is functional?

Comment:

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CheckList Information

Name :	TECH - SITE PICTURES	**Status :**	Not Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	06/20/2024 - Brianna Biggs - National TAB		

CheckList Item Details

STORE FRONT

Comment:

RTU-1

Comment:

RTU-2

Comment:

KEF-1

Comment:

EF-1

Comment:

EF-2

Comment:

MUA-1

Comment:

HOOD-1	

Comment:

National TAB

Project: 06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

System/Unit: AHU/RTU

Asset: RTU1 AREA:

Unit Data		
	Design	**Actual**
MFG	CARRIER	CARRIER
Serial Num	-	1424P69413
Model Num	48HCD09	48HCD09
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	
OA Filter Size 1	-	
Num Final Filter 1	-	4
Final Filter Size 1	-	20"X20"

Motor Data		
	Design	**Actual**
Motor MFG	-	NL
Frame	-	NL
Horsepower	3	NL
Motor Rpm	-	NL
Phase	3	3
Rated Voltage	480	460
Rated Amperage	-	3

Test Data		
	Design	**Actual**
SF CFM	3400	3279
RA CFM	3050	2905
OA CFM	350	374
RL Voltage	-	491/484/490
RL Amperage	-	3.36/2.73//2.29
SF Rotation	-	
SF System SetPt	-	8.55V HIGH SPEED
RA Damper Position	-	3VOLTS
Min OA Damper Position	-	3.0 VOLTS
Min OA Damper Type	-	
OA Enthalpy Setpt	-	ES3

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.90
Fan Suction SP	-	-1.44
Fan Discharge SP	-	0.39
Total ESP	1.0	1.29
Fan Total SP	-	1.83

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

Notes:
Current imbalance L1- L3

Unable to traverse linear diffusers for k factor, .96 k factor used from previous experience on similar equipment.

Diffuser balance not complete at this time, total airflow within 96% of design.

Written By: Cody Collett on 06/26/2024

National TAB

Project:06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

AHU/RTU

Diffuser Supply (GRD)

RTU1/

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
SGRD1	REGISTER	L1	10"	250	.96	234			-
SGRD2	REGISTER	L1	10"	250	.96	238			-
SGRD3	REGISTER	L1	10"	250	.96	211			-
SGRD4	REGISTER	L1	10"	250	.96	159			-
SGRD5	KITCHEN HOOD	ACPSP	127X6	780	5.19	742			-
SGRD6	KITCHEN	D1	10"	350		300			-
SGRD7	KITCHEN	D1	10"	280		335			-
SGRD8	KITCHEN	D1	10"	280		340			-
SGRD9	KITCHEN	D1	10"	280		346			-
SGRD10	KITCHEN	D1	10"	280		340			-
SGRD11	OFFICE	D1	8"	150		34			-
Total				3400		3279	0	0	0%

National TAB

Project: 06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

System/Unit: AHU/RTU

Asset: RTU2 AREA:

Unit Data		
	Design	**Actual**
MFG	CARRIER	CARRIER
Serial Num	-	1424P69412
Model Num	48HCD12	48HCD12
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	
OA Filter Size 1	-	
Num Final Filter 1	-	4
Final Filter Size 1	-	20"X20"

Motor Data		
	Design	**Actual**
Motor MFG	-	
Frame	-	
Horsepower	3	
Motor Rpm	-	
Phase	3	3
Rated Voltage	480	460
Rated Amperage	-	5.6

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	-	

Test Data		
	Design	**Actual**
SF CFM	4000	3908
RA CFM	3350	3202
OA CFM	650	706
RL Voltage	-	484/487/490
RL Amperage	-	3.80/3.44/3.37
SF Rotation	-	
SF System SetPt	-	9 VOLTS HIGH SPEED
RA Damper Position	-	
Min OA Damper Position	-	3.25 VOLTS
Min OA Damper Type	-	
OA Enthalpy Setpt	-	ES3

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.78
Fan Suction SP	-	-1.35
Fan Discharge SP	-	1.14
Total ESP	1.0	1.92
Fan Total SP	-	2.49

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

National TAB

Project:06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

AHU/RTU

Diffuser Supply (GRD)

RTU2/

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
SGRD1	LOBBY	R1		450					-
SGRD2	LOBBY	R1		250					-
SGRD3	LOBBY	R1		450					-
SGRD4	LOBBY	R1		250					-
SGRD5	LOBBY	R1		250					-
SGRD6	LOBBY	R1		250					-
SGRD7	LOBBY	R1		250					-
SGRD8	LOBBY	R1		400					-
SGRD9	LOBBY	R1		400					-
SGRD10	LOBBY	R1		400					-
SGRD11	LOBBY	R1		400					-
SGRD12	CORRIDOR	D2	8"	150					-
SGRD13	BATHROOM	D2	6"	50					-
SGRD14	BATHROOM	D2	6"						-
Total				3950		0	0	0	0%

National TAB

Project: 06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

System/Unit: FAN - Exhaust

Asset: EF2 AREA:RESTROOM

Unit Data		
	Design	**Actual**
MFG	GREENHECK	GREENHECK
Model Num	SP-A290	SP-A290
Serial Num	-	MOD: S33Q222ZB-09+
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	QUEACE
Frame	-	NL
Horsepower	0.03	NL
Motor Rpm	-	1550
Phase	1	1
Voltage (rated)	120	115
Amperage (rated)	-	0.4
Service Factor	-	NL

Test Data		
	Design	**Actual**
CFM	125	126
System SetPt	-	95%
RL Amperage	-	.43

National TAB

Project: 06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

System/Unit: FAN - Exhaust

Asset: EF3 AREA:RESTROOM

Unit Data		
	Design	**Actual**
MFG	GREENHECK	GREENHECK
Model Num	SP-A290	SP-A290
Serial Num	-	MOD: S33Q222ZB-09+
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	QUEACE
Frame	-	NL
Horsepower	0.03	NL
Motor Rpm	-	1550
Phase	1	1
Voltage (rated)	120	115
Amperage (rated)	-	0.4
Service Factor	-	NL

Test Data		
	Design	**Actual**
CFM	125	122
Motor RPM	-	1550
System SetPt	-	95%
RL Amperage	-	.42

National TAB

Project: 06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

System/Unit: FAN - Exhaust

Asset: KEF1 AREA:

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	DU85HFA	DU85HFA
Serial Num	-	6490056
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TELCO GREEN
Frame	-	NL
Horsepower	1	1
Motor Rpm	-	1800
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	11.6
Service Factor	-	NL

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

National TAB

Project: 06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

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	-	6490056
Type	MUA	MUA
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TECO WESTINGHOUSE
Frame	-	145T
Horsepower	2	2
Motor Rpm	-	1745
Phase	3	3
Voltage (rated)	460	230/460
Amperage (rated)	-	5.64/2.82
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	-	-0.45

Test Data		
	Design	**Actual**
CFM	1976	1780
SF RPM	2143	
SF System SetPt	-	60hz
RL Voltage	-	495/485/482
RL Amperage	-	1.96/1.95/1.86
Total ESP	-	

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

National TAB

Project: 06-24-24 CAVA HOUSTON, TX (COPPERFIELD)

System/Unit: Kitchen Hood Type I

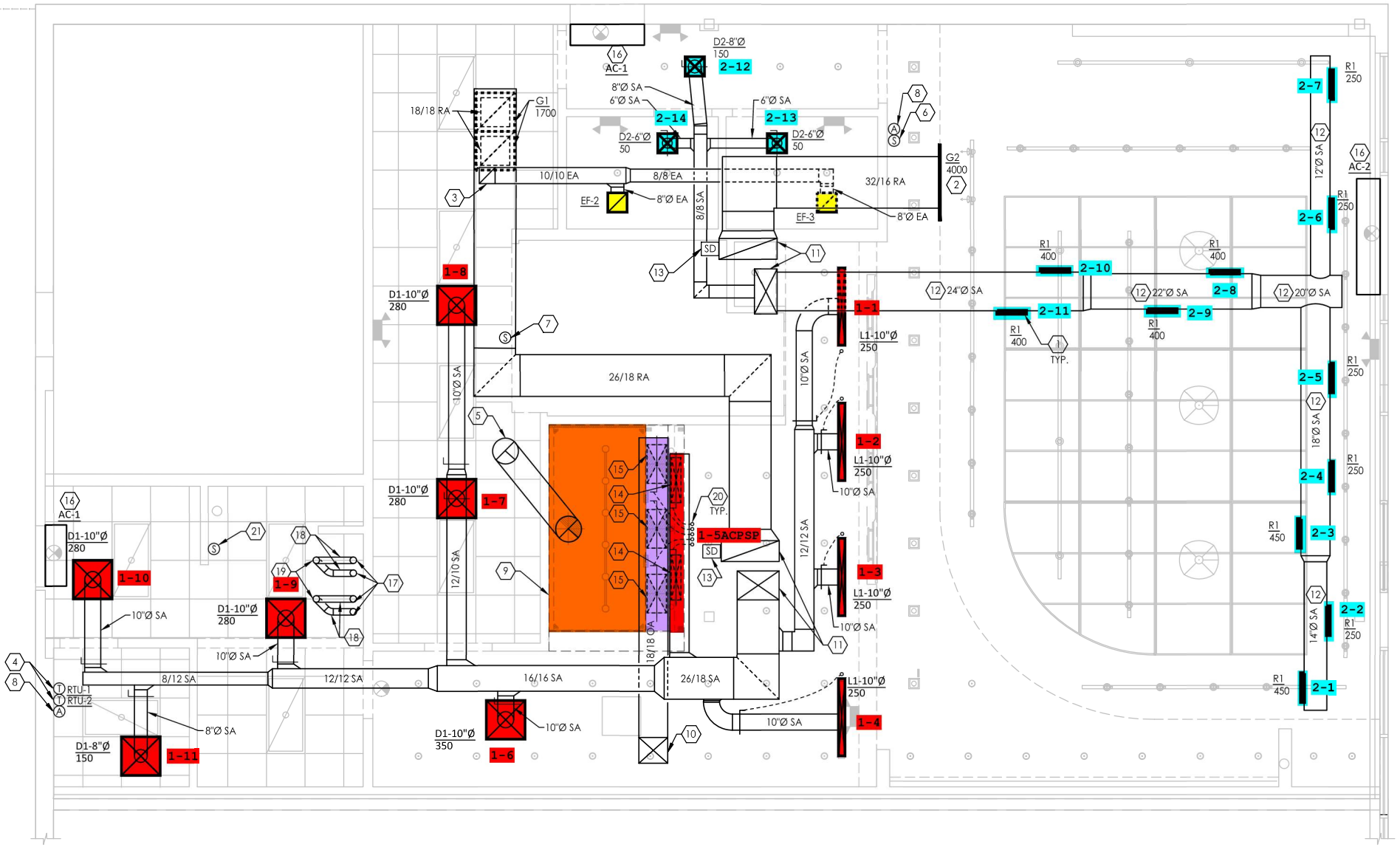
Asset: HD1 AREA:

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	6030 ND-2-ACPSP-F	6030 ND-2-ACPSP-F
Job / Serial Num	-	6490056
Type	TYPE I CANOPY	TYPE I CANOPY
Hood length	127"	128"
Hood Width	60"	60"
Supply Plenum Type	-	AC 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	-	136
Filter2 FPM	-	138
Filter3 FPM	-	142
Filter4 FPM	-	149
Filter5 FPM	-	135
Filter6 FPM	-	113
Filter7 FPM	-	122
Filter Ave FPM(corr)	-	133
CFM	2381	1936

Cooking Equipment		
	Design	**Actual**
Item 1	-	GRIDDLE
Item 2	-	FRYER
Item 3	-	OVEN
Item 4	-	GAS STOVE TOP

Test Data Supply		
	Design	**Actual**
Total AK Area	13.61	13.61
Kv factor (Vel)	0.89	0.89
Num of Readings	-	10
Reading1 FPM	-	161
Reading2 FPM	-	143
Reading3 FPM	-	135
Reading4 FPM	-	153
Reading5 FPM	-	145
Reading6 FPM	-	138
Reading7 FPM	-	157
Reading8 FPM	-	151
Reading9 FPM	-	135
Reading10 FPM	-	157
Ave FPM(corr)	-	147
CFM	1976	1780



1 MECHANICAL PLAN

1/4" = 1'-0"

Date: 6/28/2024