Report By:

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

Report: TAB Report

Function: Test, Adjust, & Balance

Date: 10/15/2025

Completed By: National TAB

PROJECT

09-29-25 QT #1107 ANDERSON, SC

4123 CLEMSON BLVD

ANDERSON, SC

Client

QUIKTRIP

4705 SOUTH 129TH EAST AVENUE

TULSA, OK 74134

National TAB

Project: 09-29-25 QT #1107 ANDERSON, SC

Table Of Contents

Project Summary

Project Summary
The summary below provides a quick understanding of our scope of work and general testing procedures. Enclosed in the report are further details 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 was measured with a flow hood to establish total flow. The total flow was then adjusted via the VFD so that airflow fell within design tolerances. All diffusers on the kitchen RTU were balanced to the engineer's design flow. The diffusers on the sales floor were only adjusted when there were noticeable issues present like drafting or dampers that were found completely closed. The Hoods On outside air rate was set by first establishing the typical QT set point at the Emerson controller and then making manually adjustments on the roof. The hoods off airflow setpoint was found by adjusting the damper position at the Emerson controller until the design airflow was achieved. Outside air was measured by reading the intake air opening with a velocity grid and multiplying by the free area. After completion of TAB all overrides were released.

Kitchen Exhaust Hood & Associated Fans
The 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.

Restroom Exhaust Fans
The restroom exhaust fans were measured with a flow hood. The total flow was balanced for the fan with the exception of the new grille over the combi-oven, which was balanced to the listed design.

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 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

- EF-1 speed controller
- RTU-3 economizer doesn’t close all the way

09-29-25 QT #1107 ANDERSON, SC

Project Issue Information

Issue Name : EF-1 speed controller

Description : The speed controller on EF-1 is not working, fan was left on high, above design.

Created By : National TAB

Assigned To : National TAB - Brianna Biggs

Status : Open

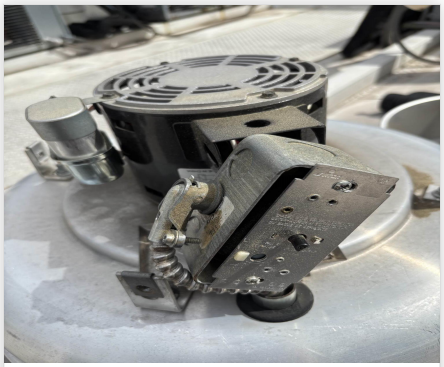
Priority : Medium

Asset Tag : EF1

Originated Date : 09/30/2025 - Christian Moller - National TAB

Project Issue File Details

09/30/2025



09/30/2025

09-29-25 QT #1107 ANDERSON, SC

Project Issue Information

Issue Name : RTU-3 economizer doesn't close all the way

Description : The economizer on RTU 3 does not close more than 0.75". This is enough for 807 CFM of OA but does not close enough to find a set point for the 350CFM of OA also required. (Picture shows lowest set point)

Created By :	National TAB	**Assigned To :**	National TAB - Brianna Biggs
Status :	Open		
Priority :	Medium	**Asset Tag :**	RT-3
Originated Date :	09/30/2025 - Christian Moller - National TAB		

Project Issue File Details

09/30/2025

09/30/2025

NATIONAL TAB

AIR BALANCE SCHEDULE

UNIT	AREA SERVED	HOOD ON OA		HOOD OFF OA		HOOD ON EXHAUST		HOOD OFF EXHAUST	
		DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL
RTU 1	SALES	800	825	350	335				
RTU-2	SALES	800	806	350	348				
RTU-3	BOH/KITCHEN	800	807	350	807				
EF-1	WOMEN'S RR					225	324	225	324
EF-2	MEN'S RR					525	481	525	481
EF-3	HOOD					1350	1385	0	0
TOTALS		2400	2438	1050	1490	2100	2190	750	805

HOODS ON

NET AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	2400	2438
TOTAL EXHAUST	2100	2190
NET AIRFLOW	300	248

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS
FRONT	0.0022
SIDE	
REAR	
AVERAGE	**0.0022**

HOODS OFF

NET AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	1050	1490
TOTAL EXHAUST	750	805
NET AIRFLOW	300	685

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS
FRONT	0.016
SIDE	
REAR	
AVERAGE	**0.016**

NOTES:

CheckList List

- 01: RTU’s/AHU’s
- 02: Exhaust Fans
- 03: Hoods
- 04: Final Tests

09-29-25 QT #1107 ANDERSON, SC

CheckList Information

Name :	01: RTU’s/AHU’s	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	09/17/2025 - Trinity Dodds - National TAB		
Completed Date :	09/30/2025 - Christian Moller - National TAB		

CheckList Item Details

RTU's/AHU's

Evaporator coils are clean?	Pass
Comment:	
Condenser coils are clean?	Pass
Comment:	
Gas piping is installed and valves are turned on?	Pass
Comment:	
Unit free of noticeable noise and vibration	Pass
Comment:	

09-29-25 QT #1107 ANDERSON, SC

CheckList Information

Name :	02: Exhaust Fans	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	09/17/2025 - Trinity Dodds - National TAB		
Completed Date :	09/30/2025 - Christian Moller - National TAB		

CheckList Item Details

EF's

Hinge kit installed installed on hood fan?	Pass
Comment:	
Flex conduit is long enough so that fan can be completely tilted back?	Pass
Comment:	
No major leakage around the fan base	Pass
Comment:	
Unit is free of noise and vibration	Pass
Comment:	

09-29-25 QT #1107 ANDERSON, SC

CheckList Information

Name :	03: Hoods	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	09/17/2025 - Trinity Dodds - National TAB		
Completed Date :	10/02/2025 - Christian Moller - National TAB		

CheckList Item Details

HOODS

Hood is free of alarms?	N/A
Comment: FIRE TEST STILL BEING COMPLETED.	
Hood is free of damage?	Pass
Comment:	
End panels are installed per prototype?	Pass
Comment:	

09-29-25 QT #1107 ANDERSON, SC

CheckList Information

Name :	04: Final Tests	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	09/17/2025 - Trinity Dodds - National TAB		
Completed Date :	10/03/2025 - Christian Moller - National TAB		

CheckList Item Details

FINAL CHECKS

HOOD CAPTURE TEST

List kitchen equipment turned on for testing

Comment:

NONE

List smoke candle type used

Comment:

S102-45 SECOND CANDLES.

Smoke test capture % - Perimeter of hood

Comment:

100%

Smoke test capture % - Top of cooking surface

Comment:

100%

WITNESS

Date test was completed	10/02/2025

Comment:

TAB tech name / Firm

Comment:

CHRISTIAN MOLLER/NTAB

Site super name / Firm

Comment:

KEVIN GREEN/ASCENT CONSTRUCTION

Owner representative name / Firm (if Applicable)

Comment:

N/A

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)	Pass

Comment:

FRONT: 0.0022"

National TAB

Project: 09-29-25 QT #1107 ANDERSON, SC

System/Unit: AHU/RTU

Asset: RT-1 AREA:SALES FLOOR

Unit Data		
	Design	**Actual**
MFG	NA	AAON
Serial Num	-	201107-ANEK05242
Model Num	NA	RN-013-8-0-EA0A-152
Num OA Filters 1	-	1
OA Filter Size 1	-	45X25

Motor Data		
	Design	**Actual**
Motor MFG	-	AAON
Frame	-	NL
Horsepower	-	3
Motor Rpm	-	1760
Phase	-	3
Rated Voltage	-	208
Rated Amperage	-	10.6

Test Data		
	Design	**Actual**
SF CFM	4200	4464
OA CFM (Hoods On)	800	825
OA CFM (Hoods Off)	350	335
RL Voltage	-	206/208/206
RL Amperage	-	6.9/6.1/5.8
VFD Max SetPt	-	37Hz
VFD Min SetPt	-	23Hz
OA Damper Position (Hoods On)	-	1"
OA Damper Position (Hoods Off)	-	0.1"

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.51"
Fan Suction SP	-	-0.66"
Fan Discharge SP	-	0.59"
Total ESP	-	1.17"
Fan Total SP	-	1.25"

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

Completed By: Christian Moller on 09/30/2025

Unit Data - PHOTO LOG

09/30/2025

National TAB

Project: 09-29-25 QT #1107 ANDERSON, SC

System/Unit: AHU/RTU

Asset: RT-2 AREA:SALES FLOOR

Unit Data		
	Design	**Actual**
MFG	NA	AAON
Serial Num	-	201107-ANEK05243
Model Num	NA	RN-013-8-0-EA0A-152
Num OA Filters 1	-	1
OA Filter Size 1	-	45X25

Motor Data		
	Design	**Actual**
Motor MFG	-	AAON
Frame	-	NL
Horsepower	-	3
Motor Rpm	-	1760
Phase	-	3
Rated Voltage	-	208
Rated Amperage	-	10.6

Test Data		
	Design	**Actual**
SF CFM	4200	4346
OA CFM (Hoods On)	800	806
OA CFM (Hoods Off)	350	348
RL Voltage	-	207/207/208
RL Amperage	-	5.9/6.8/5.6
VFD Max SetPt	-	37Hz
VFD Min SetPt	-	23Hz
OA Damper Position (Hoods On)	-	1"
OA Damper Position (Hoods Off)	-	0.25"

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.37"
Fan Suction SP	-	-0.52"
Fan Discharge SP	-	0.48"
Total ESP	-	0.89"
Fan Total SP	-	1"

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

Completed By: Christian Moller on 09/30/2025

Unit Data - PHOTO LOG

09/30/2025

National TAB

Project: 09-29-25 QT #1107 ANDERSON, SC

System/Unit: AHU/RTU

Asset: RT-3 AREA:BOH/KITCHEN

Unit Data		
	Design	**Actual**
MFG	NA	AAON
Serial Num	-	201107-ANEK05244
Model Num	NA	RN-013-8-0-EA0A-152
Num OA Filters 1	-	1
OA Filter Size 1	-	45X25

Motor Data		
	Design	**Actual**
Motor MFG	-	AAON
Frame	-	NL
Horsepower	-	3
Motor Rpm	-	1760
Phase	-	3
Rated Voltage	-	208
Rated Amperage	-	10.6

Test Data		
	Design	**Actual**
SF CFM	4200	4311
OA CFM (Hoods On)	800	807
OA CFM (Hoods Off)	350	807
RL Voltage	-	206/208/206
RL Amperage	-	4.6/5.3/4.8
VFD Max SetPt	-	34Hz
VFD Min SetPt	-	23Hz
OA Damper Position (Hoods On)	-	0.75"
OA Damper Position (Hoods Off)	-	0.75"

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.41"
Fan Suction SP	-	-0.57"
Fan Discharge SP	-	0.66"
Total ESP	-	0.98"
Fan Total SP	-	1.23"

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

Completed By: Christian Moller on 09/30/2025

Notes:
Economizer will not shut enough to get 350CFM, even with it on 0V.

Written By: Christian Moller on 09/30/2025

Unit Data - PHOTO LOG

09/30/2025

National TAB

Project:09-29-25 QT #1107 ANDERSON, SC

AHU/RTU

Diffuser Supply (GRD)

RT-3/BOH/KITCHEN

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
SGRD1	SUPPORT SERVICE	SI	12"	800	1	643	873	862	107.8
SGRD2	SUPPORT SERVICE	SI	12"	800	1	572	726	821	102.6
SGRD3	SUPPORT SERVICE	SI	12"	800	1	681	809	833	104.1
SGRD4	SUPPORT SERVICE	SI	12"	800	1	412	787	808	101.0
SGRD5	WORKROOM	ES	12"	750	1	532	671	762	101.6
SGRD6	WORKROOM	ES	8"	250	1	155	202	225	90.0
Total				4200		2995	4068	4311	102.64%

National TAB

Project: 09-29-25 QT #1107 ANDERSON, SC

System/Unit: FAN - Exhaust

Asset: EF1 AREA:WOMEN'S RR

Unit Data		
	Design	**Actual**
MFG	NA	COOK
Model Num	NA	90 ACEH 90C15DH
Serial Num	-	418SD68271-00/0000701
Type	-	UPBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	COOK
Frame	-	NL
Horsepower	-	0.125
Motor Rpm	-	1550
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	1.7
Service Factor	-	NL

Test Data		
	Design	**Actual**
CFM	225	324
Fan Rotation	-	CCW
System SetPt	-	SPEED CONTROLLER / HIGH
RL Voltage	-	110
RL Amperage	-	0.98
Total ESP	-	0.46"
Fan Inlet SP	-	-0.46"
Fan Discharge SP	-	ATM

Completed By: Christian Moller on 09/30/2025

Unit Data - PHOTO LOG

09/30/2025

National TAB

Project: 09-29-25 QT #1107 ANDERSON, SC

System/Unit: FAN - Exhaust

Asset: EF2 AREA:MEN'S RR

Unit Data		
	Design	**Actual**
MFG	NA	COOK
Model Num	NA	120 ACE 120C13D
Serial Num	-	418SD68271-00/00002201
Type	-	UPBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	COOK
Frame	-	48Y
Horsepower	-	0.250
Motor Rpm	-	1300
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	3.3
Service Factor	-	NL

Test Data		
	Design	**Actual**
CFM	525	483
Fan Rotation	-	CCW
System SetPt	-	SPEED CONTROLLER / HIGH
RL Voltage	-	110
RL Amperage	-	2.7
Total ESP	-	0.67"
Fan Inlet SP	-	-0.67"
Fan Discharge SP	-	ATM

Completed By: Christian Moller on 09/30/2025

Unit Data - PHOTO LOG

09/30/2025

Diffuser Ret/Exh (GRD)

EF2/MEN'S RR

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
EGRD1	SUPPORT SERVICE	RI	8"	150	1	144	144	144	96.0
Total				150		144	144	144	96%

National TAB

Project: 09-29-25 QT #1107 ANDERSON, SC

System/Unit: FAN - Exhaust

Asset: EF3 AREA:KITCHEN HD

Unit Data		
	Design	**Actual**
MFG	NA	CAPTIVEAIRE
Model Num	NA	DU50HFA
Serial Num	-	7644874
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	CAPTIVEAIRE
Frame	-	NL
Horsepower	1/2	0.5
Motor Rpm	-	1800
Phase	-	1
Voltage (rated)	-	208
Amperage (rated)	-	3.6
Service Factor	-	NL

Test Data		
	Design	**Actual**
CFM	1350	1385
Fan Rotation	-	CCW
System SetPt	-	HMI / 55.8Hz
RL Voltage	-	210
RL Amperage	-	3.1
Total ESP	-	NR
Fan Inlet SP	-	NR
Fan Discharge SP	-	ATM

Completed By: Christian Moller on 10/03/2025

Unit Data - PHOTO LOG

09/30/2025

National TAB

Project: 09-29-25 QT #1107 ANDERSON, SC

System/Unit: Kitchen Hood Type I

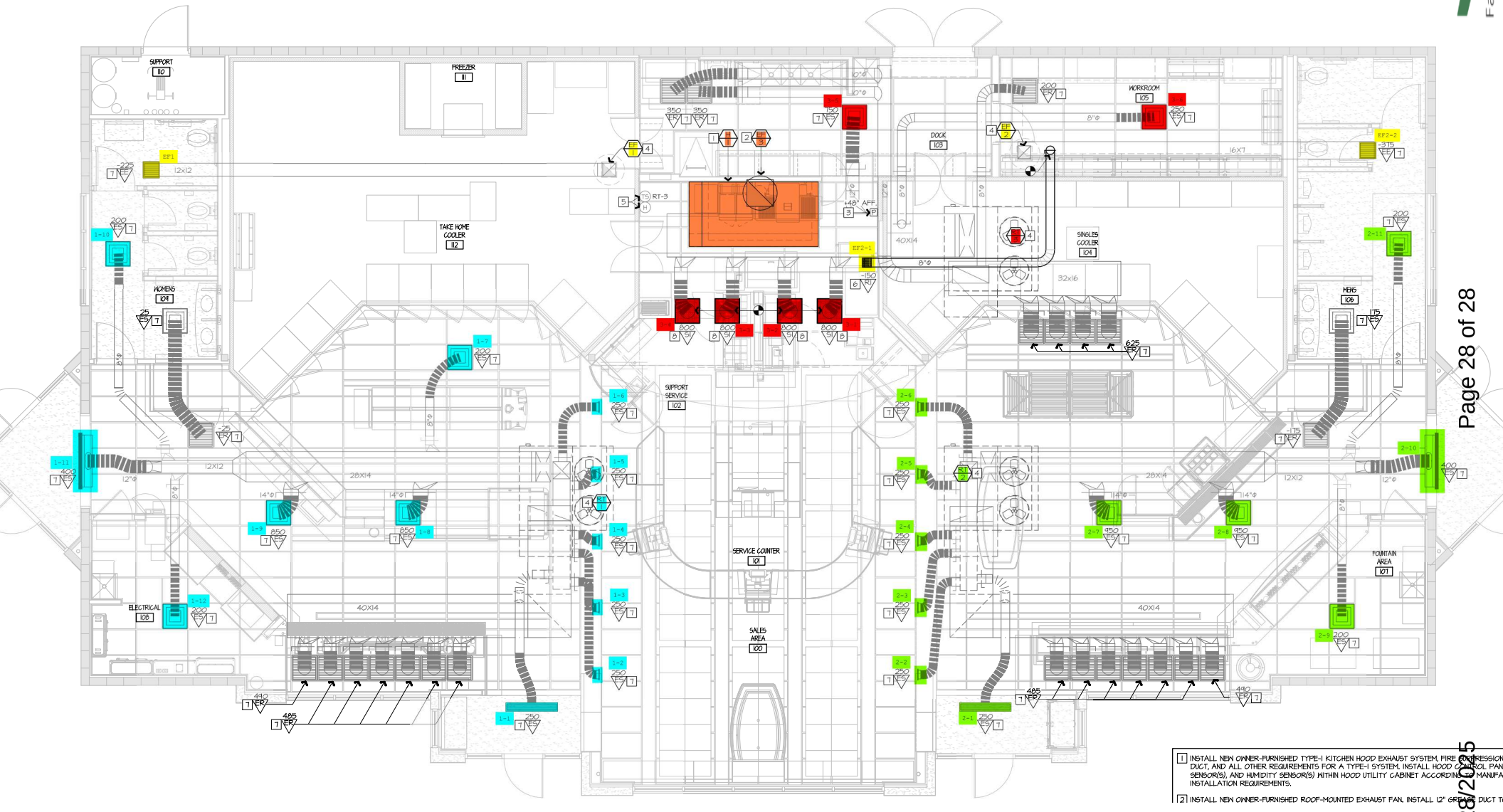
Asset: HD1 AREA:GRIDDLE

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	6030ND-2-F	6030ND-2
Job / Serial Num	-	7644874
Type	-	TYPE I CANOPY
Hood length	-	122"
Hood Width	-	60"

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	BAFFLE
Filter Size 1	-	16X20
Filter Qty 1	-	6
Filter AK factor size 1	-	2.08
Filter Total AK Area	-	12.48
Filter1 FPM	-	112
Filter2 FPM	-	120
Filter3 FPM	-	118
Filter4 FPM	-	114
Filter5 FPM	-	106
Filter6 FPM	-	98
Filter Ave FPM(corr)	-	111
CFM	1350	1385

Cooking Equipment	
	Actual
Item 1	FRYER
Item 2	PIZZA OVEN

Completed By: Christian Moller on 10/03/2025



1 INSTALL NEW OWNER-FURNISHED TYPE-I KITCHEN HOOD EXHAUST SYSTEM, FIRE SUPPRESSION DUCT, AND ALL OTHER REQUIREMENTS FOR A TYPE-I SYSTEM. INSTALL HOOD CONTROL PAN SENSOR(S), AND HUMIDITY SENSOR(S) WITHIN HOOD UTILITY CABINET ACCORDING TO MANUFA INSTALLATION REQUIREMENTS.

2 INSTALL NEW OWNER-FURNISHED ROOF-MOUNTED EXHAUST FAN. INSTALL 12" GRE DUCT T

Date: 10/26/2015