Report By:

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

Report: TAB Report

Function: Test, Adjust, & Balance

Date: 10/23/2025

Completed By: National TAB

PROJECT

10-27-25 QT #1126 SPARTANBURG, SC

2313 REIDVILLE RD

SPARTANBURG, SC

Client

QUIKTRIP

4705 SOUTH 129TH EAST AVENUE

TULSA, OK 74134

National TAB

Project: 10-27-25 QT #1126 SPARTANBURG, 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-2 Speed Controller
- Incorrect Kitchen Diffusers

10-27-25 QT #1126 SPARTANBURG, SC

Project Issue Information

Issue Name : EF-2 Speed Controller

Description : The speed controller for EF-2 is set to maximum and there is insufficient airflow for EF2-1 and EF2-2.

Created By :	National TAB	**Assigned To :**	National TAB - Dan Hertenstein
Status :	Open		
Priority :	Low	**Asset Tag :**	EF2
Originated Date :	11/07/2025 - Alex Bauer - National TAB		

Project Issue File Details

11/07/2025

11/07/2025

10-27-25 QT #1126 SPARTANBURG, SC

Project Issue Information

Issue Name : Incorrect Kitchen Diffusers

Description : The diffusers 3-1 through 3-4 are not the appropriate type. They should be the Titus S1 diffuser. The contractor will be replacing the incorrect diffusers with the correct type in the near future.

Created By :	National TAB	**Assigned To :**	National TAB - Dan Hertenstein
Status :	Open		
Priority :	InfoOnly	**Asset Tag :**	RT-3
Originated Date :	11/06/2025 - Alex Bauer - National TAB		

Project Issue File Details

11/06/2025

11/06/2025

11/06/2025

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	827	350	313				
RTU-2	SALES	800	841	350	320				
RTU-3	BOH/KITCHEN	800	779	350	333				
EF-1	WOMEN'S RR					225	242	225	242
EF-2	MEN'S RR					525	344	525	344
EF-3	HOOD					1350	1260	0	0
TOTALS		2400	2447	1050	966	2100	1846	750	586

HOODS ON

NET AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	2400	2447
TOTAL EXHAUST	2100	1846
NET AIRFLOW	300	601

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS
FRONT	0.002
SIDE	0.0022
REAR	0.0035
AVERAGE	**0.0026**

HOODS OFF

NET AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	1050	966
TOTAL EXHAUST	750	586
NET AIRFLOW	300	380

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS
FRONT	0.0242
SIDE	0.0278
REAR	0.0242
AVERAGE	**0.0254**

NOTES:

See issues list.

CheckList List

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

10-27-25 QT #1126 SPARTANBURG, SC

CheckList Information

Name :	01: RTU’s/AHU’s	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	10/01/2025 - Trinity Dodds - National TAB		
Completed Date :	11/06/2025 - Alex Bauer - 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?	N/A
Comment:	
Unit free of noticeable noise and vibration	Pass
Comment:	

10-27-25 QT #1126 SPARTANBURG, SC

CheckList Information

Name :	02: Exhaust Fans	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	10/01/2025 - Trinity Dodds - National TAB		
Completed Date :	11/06/2025 - Alex Bauer - 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:	

10-27-25 QT #1126 SPARTANBURG, SC

CheckList Information

Name :	03: Hoods	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	10/01/2025 - Trinity Dodds - National TAB		
Completed Date :	11/06/2025 - Alex Bauer - National TAB		

CheckList Item Details

HOODS

Hood is free of alarms?	Pass
Comment:	
Hood is free of damage?	Pass
Comment:	
End panels are installed per prototype?	N/A
Comment:	

10-27-25 QT #1126 SPARTANBURG, SC

CheckList Information

Name :	04: Final Tests	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	10/01/2025 - Trinity Dodds - National TAB		
Completed Date :	11/07/2025 - Alex Bauer - National TAB		

CheckList Item Details

FINAL CHECKS

HOOD CAPTURE TEST

List kitchen equipment turned on for testing

Comment:

OVEN, FRYER.

List smoke candle type used

Comment:

SMOKE CANDLE

Smoke test capture % - Perimeter of hood

Comment:

100%

Smoke test capture % - Top of cooking surface

Comment:

100%

WITNESS

Date test was completed	11/06/2025

Comment:

TAB tech name / Firm

Comment:

ALEX BAUER/NTAB

Site super name / Firm

Comment:

NA

Owner representative name / Firm (if Applicable)

Comment:

NA

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:

National TAB

Project: 10-27-25 QT #1126 SPARTANBURG, SC

System/Unit: AHU/RTU

Asset: RT-1 AREA:SALES FLOOR

Unit Data	
	Actual
MFG	AAON
Serial Num	201609-ANEK14601
Model Num	RN-013-8-0-EA0A-152
Num OA Filters 1	1
OA Filter Size 1	44.5 X 22.5

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

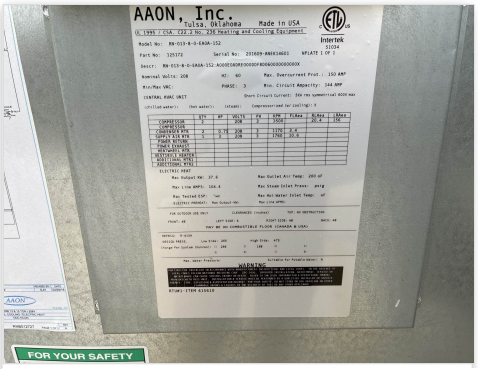
Test Data		
	Design	**Actual**
SF CFM	4200	4265
SF RPM	-	DD/40 Hz
OA CFM (Hoods On)	800	827
OA CFM (Hoods Off)	350	313
RL Voltage	-	123 VFD
RL Amperage	-	8.80 VFD
VFD Max SetPt	-	DD/40 Hz
OA Damper Position (Hoods On)	-	46%
OA Damper Position (Hoods Off)	-	26%

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.46”
Fan Suction SP	-	-0.60”
Fan Discharge SP	-	0.75”
Total ESP	-	1.06”
Fan Total SP	-	1.35”

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

Completed By: Alex Bauer on 10/30/2025

Unit Data - PHOTO LOG



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National TAB

Project: 10-27-25 QT #1126 SPARTANBURG, SC

System/Unit: AHU/RTU

Asset: RT-2 AREA:SALES FLOOR

Unit Data	
	Actual
MFG	AAON
Serial Num	201609-ANEK14602
Model Num	RN-013-8-0-EA0A-152
Num OA Filters 1	1
OA Filter Size 1	44.5 X 22.5

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

Test Data		
	Design	**Actual**
SF CFM	4200	4109
SF RPM	-	DD/37.2 Hz
OA CFM (Hoods On)	800	841
OA CFM (Hoods Off)	350	320
RL Voltage	-	106 VFD
RL Amperage	-	8.20 VFD
VFD Max SetPt	-	DD/37.2 Hz
OA Damper Position (Hoods On)	-	46%
OA Damper Position (Hoods Off)	-	24%

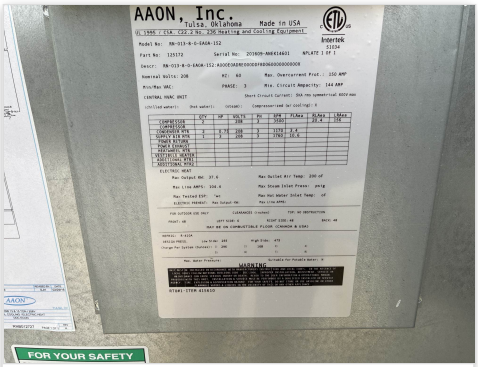
Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.43”
Fan Suction SP	-	-0.57”
Fan Discharge SP	-	0.71”
Total ESP	-	1.00”
Fan Total SP	-	1.28”

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

Completed By: Alex Bauer on 10/30/2025

Unit Data - PHOTO LOG

10/29/2025



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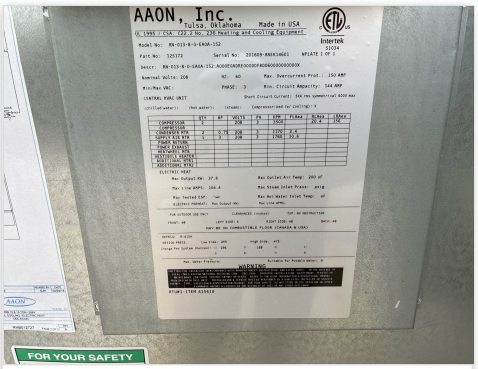

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National TAB

Project: 10-27-25 QT #1126 SPARTANBURG, SC

System/Unit: AHU/RTU

Asset: RT-3 AREA:BOH/KITCHEN

Unit Data	
	Actual
MFG	AAON
Serial Num	201609-ANEK14603
Model Num	RN-013-8-0-EA0A-152
Num OA Filters 1	1
OA Filter Size 1	44.5 X 22.5

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

Test Data		
	Design	**Actual**
SF CFM	4200	4147
SF RPM	-	DD/31 Hz
OA CFM (Hoods On)	800	779
OA CFM (Hoods Off)	350	333
RL Voltage	-	67.2 VFD
RL Amperage	-	7.06 VFD
VFD Max SetPt	-	31 Hz
OA Damper Position (Hoods On)	-	46%
OA Damper Position (Hoods Off)	-	0.25”

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.33”
Fan Suction SP	-	-0.46”
Fan Discharge SP	-	0.27”
Total ESP	-	0.79”
Fan Total SP	-	0.73”

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

Completed By: Alex Bauer on 11/06/2025

Unit Data - PHOTO LOG

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National TAB

Project:10-27-25 QT #1126 SPARTANBURG, 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	1187	1297	1089	136.1
SGRD2	SUPPORT SERVICE	SI	12"	800	1	763	809	680	85.0
SGRD3	SUPPORT SERVICE	SI	12"	800	1	799	885	743	92.9
SGRD4	SUPPORT SERVICE	SI	12"	800	1	1209	1298	1090	136.3
SGRD5	WORKROOM	ES	12"	750	1	434	521	438	58.4
SGRD6	WORKROOM	ES	8"	250	1	102	124	107	42.8
Total				4200		4494	4934	4147	98.74%

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Project: 10-27-25 QT #1126 SPARTANBURG, SC

System/Unit: FAN - Exhaust

Asset: EF1 AREA:WOMEN'S RR

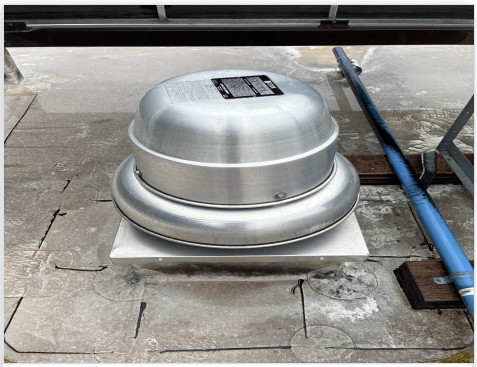
Unit Data		
	Design	**Actual**
MFG	NA	COOK
Model Num	NA	90 ACEH 90C15DH
Serial Num	-	410SG37087-00/0007511
Type	-	UPBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	US MOTORS
Frame	-	48Y
Horsepower	-	0.125
Motor Rpm	-	1600
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	1.7
Service Factor	-	1

Test Data		
	Design	**Actual**
CFM	225	242
Fan RPM	-	DD
Fan Rotation	-	CCW
System SetPt	-	MAX
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	-	0.55”
Fan Inlet SP	-	-0.55”
Fan Discharge SP	-	ATMO

Completed By: Alex Bauer on 10/30/2025

Unit Data - PHOTO LOG



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National TAB

Project: 10-27-25 QT #1126 SPARTANBURG, SC

System/Unit: FAN - Exhaust

Asset: EF2 AREA:MEN'S RR

Unit Data		
	Design	**Actual**
MFG	NA	COOK
Model Num	NA	120 ACE 120C15D
Serial Num	-	410SG37087-00/0004702
Type	-	UPBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	QUEACE
Frame	-	48Y
Horsepower	-	0.25
Motor Rpm	-	1550
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	3.3
Service Factor	-	1

Test Data		
	Design	**Actual**
CFM	525	344
Fan RPM	-	DD
Fan Rotation	-	CCW
System SetPt	-	MAX
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	-	0.16”
Fan Inlet SP	-	-0.16”
Fan Discharge SP	-	ATMO

Completed By: Alex Bauer on 11/06/2025

Unit Data - PHOTO LOG

10/29/2025

National TAB

Project:10-27-25 QT #1126 SPARTANBURG, SC

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		97	134	89.3
Total				150		0	97	134	89.33%

National TAB

Project: 10-27-25 QT #1126 SPARTANBURG, SC

System/Unit: FAN - Exhaust

Asset: EF3 AREA:KITCHEN HD

Unit Data		
	Design	**Actual**
MFG	NA	CAPTIVEAIRE
Model Num	NA	DU50HFA
Serial Num	-	2771968
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	HSSA
Frame	-	NL
Horsepower	1/2	0.75
Motor Rpm	-	1725
Phase	-	3
Voltage (rated)	-	208
Amperage (rated)	-	2.60
Service Factor	-	1.15

Test Data		
	Design	**Actual**
CFM	1350	1260
Fan RPM	-	DD/79.8 Hz
Fan Rotation	-	CCW
Motor RPM	-	DD/79.8 Hz
System SetPt	-	79.8 Hz
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	-	0.50”
Fan Inlet SP	-	-0.50”
Fan Discharge SP	-	ATMO

Completed By: Alex Bauer on 11/06/2025

Unit Data - PHOTO LOG

10/29/2025

National TAB

Project: 10-27-25 QT #1126 SPARTANBURG, 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	-	7644829
Type	-	TYPE I CANOPY
Hood length	-	60”
Hood Width	-	108”

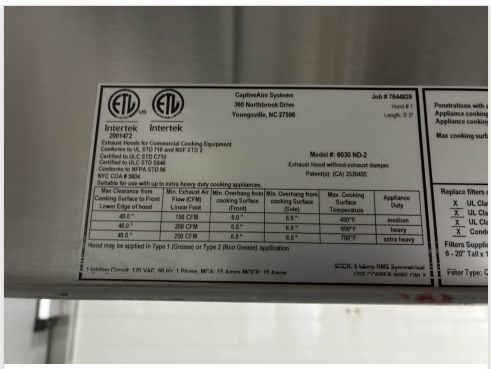
Test Data Exhaust		
	Design	**Actual**
Filter Type	-	BAFFLE FILTERS
Filter Size 1	-	16X20
Filter Qty 1	-	6
Filter AK factor size 1	-	2.08
Filter Total AK Area	-	12.48
Filter1 FPM	-	85
Filter2 FPM	-	104
Filter3 FPM	-	108
Filter4 FPM	-	107
Filter5 FPM	-	98
Filter6 FPM	-	106
Filter Ave FPM(corr)	-	101
CFM	1350	1260

Cooking Equipment	
	Actual
Item 1	OVEN
Item 2	FRYER

Completed By: Alex Bauer on 11/06/2025

Unit Data - PHOTO LOG

11/06/2025



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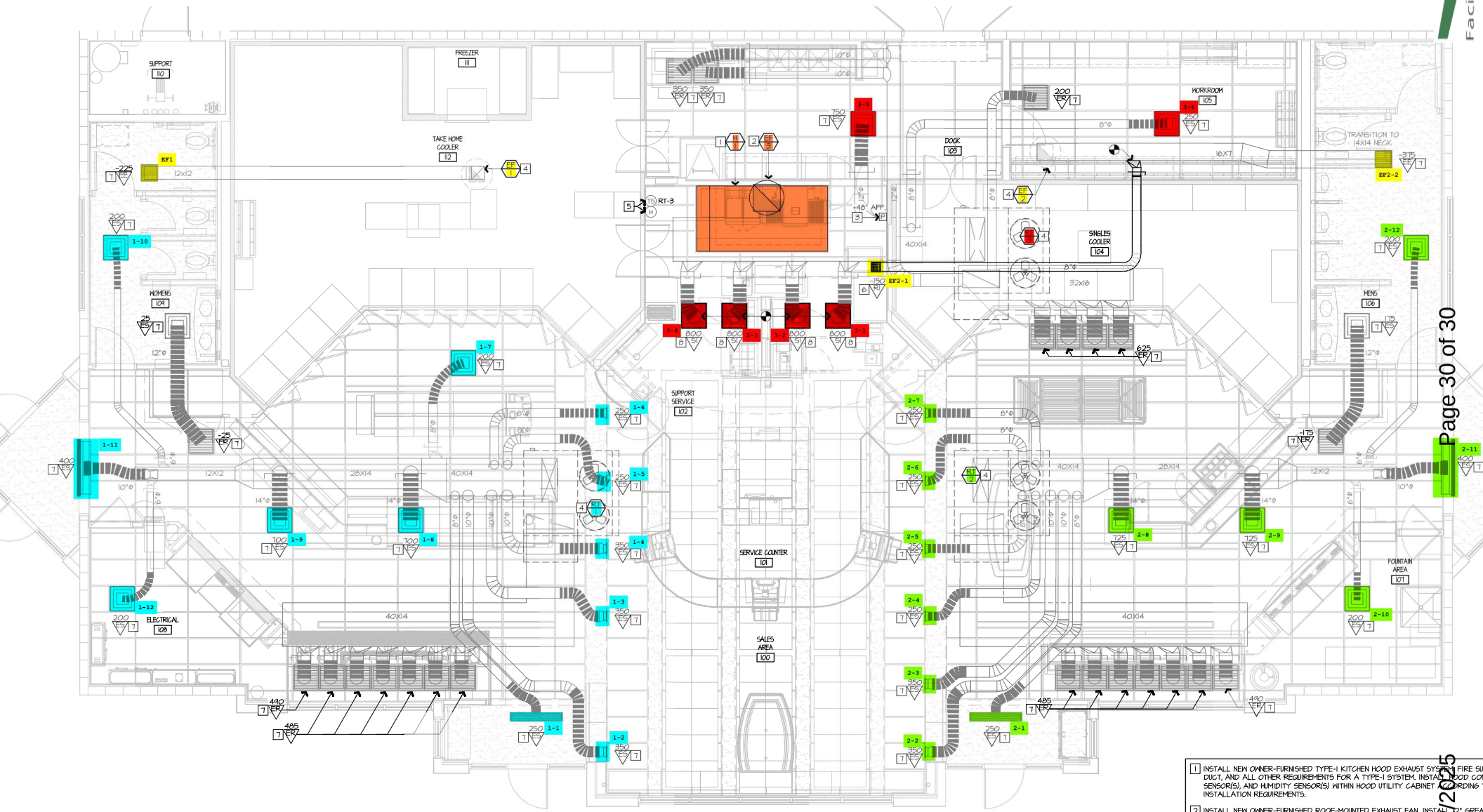

[1] INSTALL NEW OWNER-FURNISHED TYPE-I KITCHEN HOOD EXHAUST SYSTEM, FIRE SU
DUCT, AND ALL OTHER REQUIREMENTS FOR A TYPE-I SYSTEM. INSTALL HOOD CO
SENSOR(S), AND HUMIDITY SENSOR(S) WITHIN HOOD UTILITY CABINET. ACCORDING
INSTALLATION REQUIREMENTS.

[2] INSTALL NEW OWNER-FURNISHED ROOF-MOUNTED EXHAUST FAN, INST

Date: 12/12/2025