Report By:

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

NATIONAL TAB

Comfort. Under control.

Report: TAB REPORT
Function: Test, Adjust, & Balance
Date: 12/15/2022

PROJECT

12-12 WENDY'S #00355 - GREENSBORO, NC

2519 RANDLEAN RD

GREENSBORO, NC 27406

Client

WENDYS INTERNATIONAL LLC OPERATING UNIT

National TAB

Project: 12-12 WENDY'S #00355 - GREENSBORO, NC

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.

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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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
OAU-1	DINNING/KITCH	3300	3695	0	-86	3300	3781	100.0%	102.3%						
EF-1	HOOD 1											1200	1161		
EF-2	HOOD 2											1200	1208		
EF-3	RR													300	296
TOTALS		3300	3695	0	-86	3300	3781			0	0	2400	2369	300	296

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	3300	3781
TOTAL EXHAUST	2700	2665
NET AIRFLOW	600	1116

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H20)
FRONT	0.008
SIDE	-
REAR	0.017
AVERAGE	**0.0125**

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:

RR EX FAN TIED TO LIGHT IN RR. REAR DOOR BUILD PRESSURE DID NOT CHANGE MUCH WHEN RR EX FAN TURNS ON BUT FRONT INTERANCE DID. WHEN RR FAN COMES ON FRONT DOOR BP DROPS FROM 0.008 TO 0.002 BUT IS STILL POSITIVE.

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CheckList Information

Name :	SITE PICTURES	**Status :**	Submitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

STORE FRONT

Store_Front.jpeg

OAU-1

OAU-UNIT_LABEL.jpeg

OAU.jpeg

EF-1

KEF-1.jpeg

UNIT-Label.jpeg

HINGEKIT.jpeg

EF-2

KEF-2.jpeg

UNIT-LABEL.jpeg

Hinge_Kit.jpeg

EF-3

RREXFAN.jpeg

UNIT-LABEL.jpeg

RR-EXFAN.jpeg

1. Open UNIT-LABEL.jpeg

HOOD-1

HOOD-1.jpeg

HOOD-2

HOOD-2.jpeg

Notes/Comments :

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CheckList Information

Name :	TECH - STEP 1: INITIAL WALKTHROUGH	**Status :**	Submitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

INITIAL SITE WALKTHROUGH

All diffusers and grilles are installed and match design?	YES
All hood filters installed and accounted for?	YES
Hoods are wired and have power?	YES
Hood is free of alarms?	YES
Thermostats have power?	YES
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	YES

Notes/Comments :

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CheckList Information

Name :	TECH - STEP 2: UNIT DATA AND EVAL	**Status :**	Submitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

UNIT DATA AND EVALUATION WHILE GATHERING UNIT DATA CHECK THE FOLLOWING:

RTU's/AHU's

Economizers are assembled and functional?	YES
DCV Max damper opening position is set to minimum?	Yes
Free cooling enthalpy set point set for lowest setting (Typically "D")	Yes
Motors are all operating below the FLA rating?	Yes
Are belts tight?	N/A
If direct drive unit is the speed controller working.	YES
Is gas piping installed and valves turned on?	YES
Unit free of noticeable noise and vibration	Yes

EF's

Rotation is correct?	Yes
Belts are tight?	N/A
Grease cup installed on hood fan?	Yes
Hinge kit installed installed on hood fan?	Yes
Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?	Yes

Flex conduit is long enough so that fan can be completely tilted back?	Yes
There is no major leakage around base of fan?	Yes
Is the motor operating below the motor FLA rating?	Yes
For restroom fan(s) is the back draft damper installed and can it fully open?	Yes
Unit free of noticeable noise and vibration?	Yes
MUA	
Rotation is correct?	N/A
Gas piping is installed and valves are in on position?	N/A
Heater tested and is functional?	N/A
Internal motorized damper is fully opening?	N/A
Motor is operating below the FLA rating?	N/A
Unit free of noticeable noise and vibration?	N/A
HOODS	
Kitchen equipment installed in proper places?	YES
Can kitchen equipment be turned on for final smoke test?	YES
DOCUMENTATION	
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	YES

Notes/Comments :

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CheckList Information

Name :	TECH - STEP 3: TEST, ADJUST AND BALANCE	**Status :**	Submitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

TEST, ADJUST, AND BALANCE ALL EQUIPMENT:

DURING TESTING MAKE NOTE OF THE FOLLOWING:

Is space free of drafting?	YES
Is space comfortable in all areas?	YES
Is the space free of ventilation noise?	YES
If deviations from design were necessary to resolve 1-3 what were they? Otherwise put "NA".	ADDED RETURN TO OAU-1 during UNOCCUPIED, DAMPERS FUNCTION IN OCC / full open and OA SHUT 100% during UNOCCUPIED, setpoint triggered for OCC/ UNOCCUPIED when hood are turned on

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CheckList Information

Name :	TECH - STEP 4: FINAL TESTS	**Status :**	Submitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

FINAL TESTS	
HOOD CAPTURE TEST	
List equipment turned on for testing	Griddles & Fryers
List smoke candle type used	S-102
Smoke test capture - Perimeter of hood	YES,100%
Smoke test capture - Top of cooking surface	YES
WITNESS	
Date test was completed	12/15/2022
TAB tech name / Firm	JOASH ALBIN/ NTAB
Site super name / Firm	Video capture
Owner representative name / Firm (if Applicable)	Video Capture
Building pressure at front & back doors (All Systems On)	0.008/0.017
ADDITIONAL	
Do actual net building airflow, design net building airflow, and pressure coincide? If not why? (All three should either be positive or negative)	Yes
Thermostats are programmed?	Yes

Notes/Comments :

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System/Unit: AHU/RTU

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Asset: OAU1 AREA:

Unit Data		
	Design	**Actual**
MFG	AAON	AAON
Serial Num	-	2022C8-BNGP02019
Model Num	RN-020	RN-020-8-0-EB09-349
Type	OAU	OAU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	3
OA Filter Size 1	-	28.25X18.25X1
Num Final Filter 1	-	6
Final Filter Size 1	-	20X25X4

Motor Data		
	Design	**Actual**
Motor MFG	-	BALDOR
Frame	-	184T
Horsepower	2"	2
Motor Rpm	-	1175
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	6.8

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

Test Data		
	Design	**Actual**
SF CFM	3300	3695
SF RPM	-	DD
RA CFM	0	0
OA CFM	3300	3695
RL Voltage	-	211/212/210
RL Amperage	-	5.8/6.5/6.8
SF Rotation	-	CCW
RA Damper Position	-	NA
Min OA Damper Position	-	100%
Min OA Damper Type	-	ODB

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.22"
Fan Suction SP	-	-0.56"
Fan Discharge SP	-	0.52"
Total ESP	0.8"	0.74"
Fan Total SP	-	1.08"

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

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AHU/RTU

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Diffuser Supply (GRD)

OAU1/

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
SGRD1	DINING	SD5	10"	400	1	416	444	425	106.3
SGRD2	DINING	SD5	10"	400	1	409	449	433	108.3
SGRD3	DINING	SD2	8"	200	1	141	173	215	107.5
SGRD4	DINING	SD3	10"	250	1	126	213	270	108.0
SGRD5	DINING	SD2	10"	250	1	144	275	261	104.4
SGRD6	DINING	SD2	10"	250	1	268	387	267	106.8
SGRD7	KITCHEN	SD2	10"	250	1	277	361	262	104.8
SGRD8	KITCHEN	SD2	10"	250	1	93	137	269	107.6
SGRD9	KITCHEN	SD2	10"	250	1	228	284	260	104.0
SGRD10	KITCHEN	SD2	10"	250	1	302	126	255	102.0
SGRD11	KITCHEN	SD3	10"	250	1	196	399	252	100.8
SGRD12	KITCHEN	SD3	10"	250	1	184	247	269	107.6
SGRD13	DINING	SD3	6"	150	1	124	138	150	100.0
SGRD14	DINING	SD3	8"	100	1	69	231	107	107.0

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Project: 12-12 WENDY'S #00355 - GREENSBORO, NC

System/Unit: FAN - Exhaust

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Asset: EF1 AREA:

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	DU85HFA	DU85HFA
Serial Num	-	5323086
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TELCO GREEN
Frame	-	48EC
Horsepower	0.750	0.75
Motor Rpm	-	1800
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	4.25
Service Factor	-	1

Test Data		
	Design	**Actual**
CFM	1200	1161
Fan RPM	1254	1056
Fan Rotation	-	CCW
Motor RPM	-	1056
System SetPt	-	55P
RL Voltage	-	211
RL Amperage	-	2.9
Total ESP	1.250"	0.67"
Fan Inlet SP	-	-0.67"
Fan Discharge SP	-	ATM

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Project: 12-12 WENDY'S #00355 - GREENSBORO, NC

System/Unit: FAN - Exhaust

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Asset: EF2 AREA:

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	DU85HFA	DU85HFA
Serial Num	-	5323086
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TELCO GREEN
Frame	-	483C
Horsepower	0.750"	0.75
Motor Rpm	-	1800
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	4.2
Service Factor	-	1

Test Data		
	Design	**Actual**
CFM	1200	1208
Fan RPM	1254	1016
Fan Rotation	-	CCW
Motor RPM	-	1016
System SetPt	-	56"
RL Voltage	-	211
RL Amperage	-	2.8
Total ESP	1.250"	0.69"
Fan Inlet SP	-	-0.69"
Fan Discharge SP	-	ATM

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Project: 12-12 WENDY'S #00355 - GREENSBORO, NC

System/Unit: FAN - Exhaust

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Asset: EF3 AREA:

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	DR10HFA	DR10HFA
Serial Num	-	5323086
Type	DOWNBLAST	DOWNBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TELCO GREEN
Frame	-	42EC
Horsepower	0.166	0.25
Motor Rpm	-	1800
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	2.8
Service Factor	-	1

Test Data		
	Design	**Actual**
CFM	300	296
Fan RPM	1500	1045
Fan Rotation	-	CCW
Motor RPM	-	1045
System SetPt	-	60P
RL Voltage	-	115
RL Amperage	-	1.8
Total ESP	0.34"	0.48"
Fan Inlet SP	-	-0.48"
Fan Discharge SP	-	ATM

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Project:12-12 WENDY'S #00355 - GREENSBORO, NC

FAN - Exhaust

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Diffuser Ret/Exh (GRD)

EF3/

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
EGRD1	RESTROOM	RG2	8"	150	1	189	195	151	100.7
EGRD2	RESTROOM	RG2	8"	150	1	210	191	145	96.7

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Project: 12-12 WENDY'S #00355 - GREENSBORO, NC

System/Unit: Kitchen Hood Type I

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Asset: HD1 AREA:

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	5424-ND2	5424-ND2
Job / Serial Num	-	5323086
Type	TYPE I LOW PROXIMITY	TYPE I
Hood length	93"	93"
Hood Width	54"	54"

Test Data Exhaust		
	Design	**Actual**
Filter Type	SOLO FILTER	CAPTRATE SOLO
Filter Size 1	16X16	16X16
Filter Qty 1	5	5
Filter AK factor size 1	1.62	1.61
Filter Total AK Area	8.1	8.1
Filter1 FPM	-	141
Filter2 FPM	-	146
Filter3 FPM	-	145
Filter4 FPM	-	143
Filter5 FPM	-	142
Filter Ave FPM(corr)	-	143
CFM	1200	1161

Cooking Equipment		
	Design	**Actual**
Item 1	-	GRIDDLE
Item 2	-	SMALL GRIDDLE

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System/Unit: Kitchen Hood Type I

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Asset: HD2 AREA:

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	4824 ND-2	4824 ND-2
Job / Serial Num	-	5323086
Type	TYPE I LOW PROXIMITY	TYPE I
Hood length	108"	108"
Hood Width	48	48"

Test Data Exhaust		
	Design	**Actual**
Filter Type	SOLO FILTER	CAPTRATE SOLO
Filter Size 1	16X16	16X16
Filter Qty 1	6	6
Filter AK factor size 1	1.62	1.62
Filter Total AK Area	9.72	9.72
Filter1 FPM	-	129
Filter2 FPM	-	125
Filter3 FPM	-	120
Filter4 FPM	-	122
Filter5 FPM	-	124
Filter6 FPM	-	126
Filter Ave FPM(corr)	-	124
CFM	1200	1208

Cooking Equipment		
	Design	**Actual**
Item 1	-	FRYER

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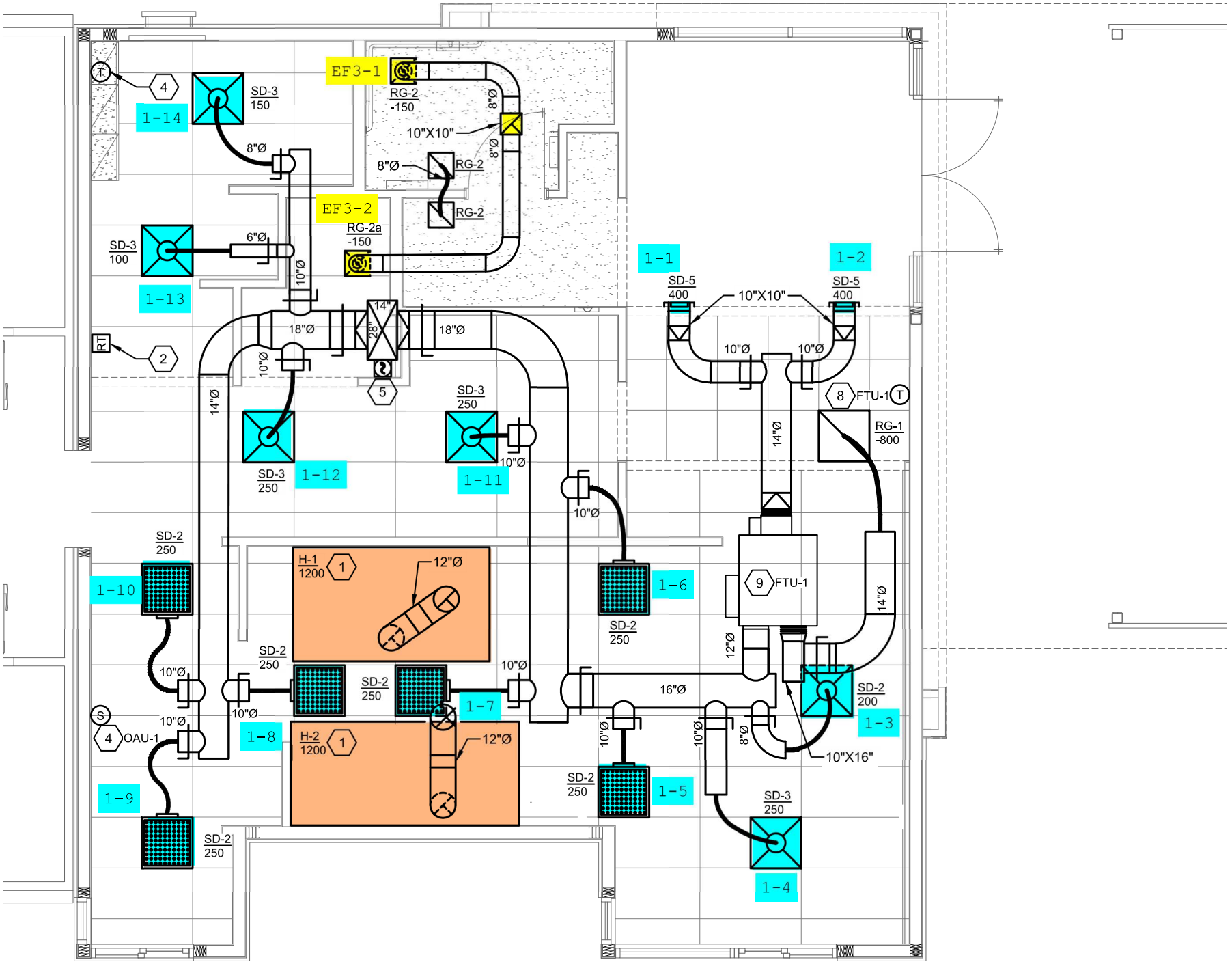
Notes:

1/4" = 1'-0"



MECHANICAL PLAN 1

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Date: 12/15/2022