Report By:

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

Report: TAB REPORT

Function: Test, Adjust, & Balance

Date: 10/09/2024

Completed By: National TAB

PROJECT

09-30-24 SWEETGREEN HINGHAM , MA (TAB, IAQ)

96 Derby St

HINGHAM, MA 02043

Client

Team Mechanical LLC

896 Washington Street

WEYMOUTH, MA 02189

National TAB

Project: 09-30-24 SWEETGREEN HINGHAM , MA (TAB, IAQ)

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.

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

- Damper Handle
- Gas Piping
- RTU 2 Balance Damper

09-30-24 SWEETGREEN HINGHAM , MA (TAB, IAQ)

Project Issue Information

Issue Name : Damper Handle

Description : Damper handle for diffuser 2-5 is missing. Balanced flow setpoint marked on damper shaft for after install.

Created By : National TAB

Assigned To : National TAB - Will Turnbough

Status : Open

Priority : Urgent

Asset Tag :

Originated Date : 10/01/2024 - Gabe Merk - National TAB

Project Issue File Details

10/01/2024

09-30-24 SWEETGREEN HINGHAM , MA (TAB, IAQ)

Project Issue Information

Issue Name :	Gas Piping		
Description :	Gas piping to both RTUs is turned off. Mechanical contractor needs to turn the valves on and complete heating startup.		
Created By :	National TAB	**Assigned To :**	National TAB - Will Turnbough
Status :	Open		
Priority :	Low	**Asset Tag :**	
Originated Date :	09/30/2024 - Gabe Merk - National TAB		

09-30-24 SWEETGREEN HINGHAM , MA (TAB, IAQ)

Project Issue Information

Issue Name : RTU 2 Balance Damper

Description : RTU 2 diffuser 2 is missing a balance damper. Unable to reduce flow to design. Remaining diffusers balanced proportionally. Once damper is installed it needs to be closed around 75% to achieve design airflow.

Created By :	National TAB	**Assigned To :**	National TAB - Will Turnbough
Status :	Open		
Priority :	High	**Asset Tag :**	SGRD2
Originated Date :	10/01/2024 - Gabe Merk - National TAB		

Project Issue File Details

10/01/2024

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	DINING	2720	2734	1960	1957	760	777	27.9%	28.4%						
RTU-2	KITCHEN	2820	2793	2455	2398	365	395	12.9%	14.1%						
EF-1	KITCHEN													750	754
EF-2	RESTROOMS													150	147
TOTALS		5540	5527	4415	4355	1125	1172			0	0	0	0	900	901

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	1125	1172
TOTAL EXHAUST	900	901
NET AIRFLOW	225	271

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H20)
FRONT	
SIDE	
REAR	
AVERAGE	**[1]**

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:

High winds appeared to be affecting the building pressure reading. Measuring a -0.03" wc average even though the net airflow on the building is positive. On calm day anticipated that the pressure will be slightly positive.

CheckList List

- TECH - STEP 1: INITIAL WALKTHROUGH
- TECH - STEP 2: UNIT DATA AND EVAL
- TECH - STEP 3: TEST, ADJUST AND BALANCE
- TECH - STEP 4: FINAL TESTS
- TECH - STEP 4B: HOOD AND OVEN EVALUATION

09-30-24 SWEETGREEN HINGHAM , MA (TAB, IAQ)

CheckList Information

Name :	TECH - STEP 1: INITIAL WALKTHROUGH	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	09/26/2024 - Brianna Biggs - National TAB		
Completed Date :	09/30/2024 - Gabe Merk - National TAB		

CheckList Item Details

INITIAL SITE WALKTHROUGH

Review Plan Review Checklist, has it been signed off and meets our standards to start balancing? If not contact processor to ensure job is ready.

Comment:

n/a

All diffusers and grilles are installed and match design?

Comment:

Yes

All hood filters installed and accounted for?

Comment:

n/a

Hoods are wired and have power?

Comment:

n/a

Hood is free of alarms?

Comment:

n/a

Thermostats have power?

Comment:

Yes

Have trades/general contractor been notified about any issues and are they created on FaciliBuild?

Comment:

n/a

09-30-24 SWEETGREEN HINGHAM , MA (TAB, IAQ)

CheckList Information

Name :	TECH - STEP 2: UNIT DATA AND EVAL	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	09/26/2024 - Brianna Biggs - National TAB		
Completed Date :	10/01/2024 - Gabe Merk - 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?

Comment:

No, economizer for Trane RTU not wired. Resolved 10/1/24

DCV Max damper opening position is set to minimum?

Comment:

Yes

Free cooling enthalpy set point set for lowest setting (Typically "D")

Comment:

Yes

Motors are all operating below the FLA rating?

Comment:

Yes

Are belts tight?

Comment:

Yes

If direct drive unit is the speed controller working.

Comment:

Yes

Is gas piping installed and valves turned on?

Comment:

Gas piping turned off.

Unit free of noticeable noise and vibrat

Comment:

Yes

EF's

Rotation is correct?

Comment:

Yes

Belts are tight?

Comment:

n/a

Grease cup installed on hood fan?

Comment:

No, not scheduled for grease cup. Type 2 fan.

Hinge kit installed installed on hood fan?

Comment:

No, Type 2 fan.

Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?

Comment:

n/a

Flex conduit is long enough so that fan can be completely tilted back?

Comment:

n/a

There is no major leakage around base of fan?

Comment:

Correct

Is the motor operating below the motor FLA rating?

Comment:

Yes

For restroom fan(s) is the back draft damper installed and can it fully open?

Comment:

Yes

Unit free of noticeable noise and vibration?

Comment:

Yes

HOODS

Kitchen equipment installed in proper places?

Comment:

Yes

Can kitchen equipment be turned on for final smoke test?

Comment:

No

DOCUMENTATION

Have trades/general contractor been notified about any issues and are they created on FaciliBuild?

Comment:

Yes

AIR PURIFICATION INSPECTION No

Comment:

PHI Air purifiers are installed?

Comment:

No

Are they installed after the evaporator coil or in the supply duct?

Comment:

Not installed

Are they powered?

Comment:

No

If PKG installed inside of the blower compartment, is the wiring exposed to UV light protected with split loom or conduit?

Comment:

Not installed

If Reme Halo, is it installed so that the air flow arrow is pointing correct direction?

Comment:

Not installed

Is a UV warning sticker installed?

Comment:

Not installed

Take picture of each air purifier and include in the report

Comment:

n/a

09-30-24 SWEETGREEN HINGHAM , MA (TAB, IAQ)

CheckList Information

Name :	TECH - STEP 3: TEST, ADJUST AND BALANCE	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	09/26/2024 - Brianna Biggs - National TAB		
Completed Date :	10/01/2024 - Gabe Merk - National TAB		

CheckList Item Details

TEST, ADJUST, AND BALANCE ALL EQUIPMENT:

DURING TESTING MAKE NOTE OF THE FOLLOWING:

Is space free of drafting?

Comment:

Yes

Is space comfortable in all areas?

Comment:

Yes

Is the space free of ventilation noise?

Comment:

No, office 112 missing damper to reduce flow. excess flow causing some noise.

If deviations from design were necessary to resolve 1-3 what were they? Otherwise put "NA".

Comment:

NA

09-30-24 SWEETGREEN HINGHAM , MA (TAB, IAQ)

CheckList Information

Name :	TECH - STEP 4: FINAL TESTS	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	09/26/2024 - Brianna Biggs - National TAB		
Completed Date :	10/01/2024 - Gabe Merk - National TAB		

CheckList Item Details

FINAL TESTS

HOOD CAPTURE TEST

List equipment turned on for testing

Comment:

None

List smoke candle type used

Comment:

S102

Smoke test capture - Perimeter of hood

Comment:

Poor

Smoke test capture - Top of cooking surface

Comment:

Poor

WITNESS

Date test was completed	
Comment: 10/1/2024	
TAB tech name / Firm	
Comment: Gabe/NTAB	
Site super name / Firm	N/A
Comment:	
Owner representative name / Firm (if Applicable)	N/A
Comment:	
Building pressure at front & back doors (All Systems On)	
Comment: Front: -0.04" Rear: -0.03"	
ADDITIONAL	
Do actual net building airflow, design net building airflow, and pressure coincide? If not why? (All three should either be positive or negative)	
Comment: Pressure Does not Coincide. windy conditions and missing ceiling pads affecting results.	
Thermostats are programmed?	
Comment: Yes	

09-30-24 SWEETGREEN HINGHAM , MA (TAB, IAQ)

CheckList Information

Name :	TECH - STEP 4B: HOOD AND OVEN EVALUATION	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	09/26/2024 - Brianna Biggs - National TAB		
Completed Date :	10/01/2024 - Gabe Merk - National TAB		

CheckList Item Details

HOOD AND OVEN EVALUATION

Is the oven covered by a hood?

Comment:

No

What is the hood overhang over the front of the hood?

Comment:

n/a

What is hood overhang over the left and right sides of the oven?

Comment:

n/a

If vertical end panels are specified, are they installed?

Comment:

n/a

SMOKE TEST AT HOOD

Comment:

If oven is capable of turning on, it is required to be turned on for smoke test. Was oven on for smoke test?

Comment:

no

Smoke test the oven at the flue on the top of the hood - Capture %?

Comment:

n/a

Smoke test the oven at perimeter of the oven - capture %?

Comment:

n/a

Smoke test the oven at the perimeter of the hood - capture %?

Comment:

n/a

IF NO HOOD IS INSTALLED ABOVE THE OVEN

If no hood is installed above the oven, and it is only a grille, smoke test at the top of the oven at the flue and note the capture %. If smoke capture is very poor, hold the candle up by the grille after a few seconds so that the smoke alarms don't get set off.

Comment:

Smoke test very poor. Set off fire alarm

- Open IMG_1459_1316126115.mov
10/01/2024

SMOKE TEST AT OVEN

Confirm that the internal fan turns on as you open the oven door?

Comment:

no

Smoke test at the oven doors as you are opening the door - capture %?

Comment:

Poor

Smoke test at the oven doors when the doors are shut - capture %?

Comment:

Poor

EXHAUST DISCHARGE AND OA INTAKES

Identify where the exhaust air is discharged and take pictures

Comment:

Roof mounted Fan

10/01/2024

Are there are any outside air intakes nearby that would be able to re-entrain the exhaust smoke? Take pictures

Comment:

No

Are there any building entrances or windows near the exhaust discharge where smoke that will cause smoke to enter unwanted spaces?

Comment:

No

Asset: RTU1 AREA:

Unit Data		
	Design	**Actual**
MFG	TRANE	DAIKIN
Serial Num	-	2407058460
Model Num	YSJ102A3	DFG1023LL00013CAA
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	42”x23”
Num Final Filter 1	-	2
Final Filter Size 1	-	25”x20”x2”
Num Final Filter 2	-	2
Final Filter Size 2	-	20"x20"x2"

Motor Data		
	Design	**Actual**
Motor MFG	-	BROAD OCEAN
Frame	-	NA
Horsepower	2	3.5
Motor Rpm	-	1600
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	10.9

Test Data		
	Design	**Actual**
SF CFM	2720	2734
RA CFM	1960	1957
OA CFM	760	777
RL Voltage	-	208/108/208
RL Amperage	-	2.8/2.1/2.3
SF Rotation	-	CW
SF System SetPt	-	T1
Min OA Damper Position	-	5.0V
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	ES5

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.26”
Fan Suction SP	-	-0.40”
Fan Discharge SP	-	0.54”
Total ESP	1.00"	0.80”
Fan Total SP	-	0.94”

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

Completed By: Gabe Merk on 10/01/2024

Diffuser Supply (GRD)

RTU1/

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
SGRD1	DINING	DSG1	12X8	340	246	315	92.6
SGRD2	DINING	DSG1	12X8	340	237	338	99.4
SGRD3	DINING	DSG1	12X8	340	253	353	103.8
SGRD4	DINING	DSG1	12X8	340	243	352	103.5
SGRD5	DINING	WSG1	12X8	330	331	353	107.0
SGRD6	DINING	WSG1	12X8	330	466	325	98.5
SGRD7	DINING	WSG1	12X8	330	465	337	102.1
SGRD8	DINING	WSG1	12X8	320	438	315	98.4
SGRD9	NORTH RR	CSD2	6"	50	45	46	92.0
Total				2720	2724	2734	100.51%

Completed By: Gabe Merk on 10/01/2024

National TAB

Project: 09-30-24 SWEETGREEN HINGHAM , MA (TAB, IAQ)

System/Unit: AHU/RTU

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Asset: RTU2 AREA:

Unit Data		
	Design	**Actual**
MFG	TRANE	TRANE
Serial Num	-	223111931L
Model Num	YSC102H4	YSC102H4
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	37”x17”
Num Final Filter 1	-	4
Final Filter Size 1	-	20”x25”x2”
Final Filter Size 2	-	

Test Data		
	Design	**Actual**
SF CFM	2820	2793
SF RPM	-	840
RA CFM	2455	2398
OA CFM	365	395
RL Voltage	-	480/480/481
RL Amperage	-	2.8/2.7/2.9
SF Rotation	-	CW
Min OA Damper Position	-	SHUT
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	E

Motor Data		
	Design	**Actual**
Motor MFG	-	Marathon
Frame	-	56
Horsepower	2	2.0
Motor Rpm	-	1725
Phase	3	3
Rated Voltage	460	460
Rated Amperage	-	3.1

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.68”
Fan Suction SP	-	-0.91”
Fan Discharge SP	-	0.41”
Total ESP	1.00"	1.09”
Fan Total SP	-	1.32”

Drive Data	
	Actual
Motor Sheave Size	3-3/4”
Motor Bore Size	1”
Motor Sheave SetPt	3-1/2 OUT
Fan Sheave Size	AK64x1
Fan Sheave Bore	1”
Belt CL Distance	10-1/2”
Num of Belts	1
Belt Size	AX35
Belt Alignment	Good

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

Completed By: Gabe Merk on 10/01/2024

Notes:
DIFFUSER 2-2 MISSING DAMPER
ALL DIFFUSERS LEFT LOW IN ANTICIPATION OF DAMPER INSTALL.
DIFFUSER 2-5 MISSING DAMPER HANDLE, BALANCED POSITION MARKED ON DAMPER SHAFT.

Written By: Gabe Merk on 10/01/2024

Diffuser Supply (GRD)

RTU2/

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
SGRD1	WAREWASH	CSD1	8"	150	1	174	293	131	87.3
SGRD2	OPERATIONS RM	CSD3	8"	120	1	226	376	382	318.3
SGRD3	UTILITY ROOM	CSD1	6"	100	1	23	57	87	87.0
SGRD4	WAREWASH	CSD1	8"	150	1	60	118	140	93.3
SGRD5	BOH	CSD1	6"	100	1	95	159	89	89.0
SGRD6	HOT PREP	CSD2	8"	250	1	139	218	238	95.2
SGRD7	HOT PREP	CSD2	8"	250	1	125	207	213	85.2
SGRD8	HOT PREP	CSD2	8"	250	1	120	213	219	87.6
SGRD9	HOT PREP	CSD2	8"	250	1	129	183	218	87.2
SGRD10	HOT PREP	CSD2	8"	240	1	128	194	209	87.1
SGRD11	HOT PREP	CSD2	8"	240	1	136	250	213	88.8
SGRD12	HOT PREP	CSD2	8"	240	1	109	173	194	80.8
SGRD13	HOT PREP	CSD2	8"	240	1	115	220	229	95.4
SGRD14	HOT PREP	CSD2	8"	240	1	134	250	231	96.3
Total				2820		1713	2911	2793	99.04%

Completed By: Gabe Merk on 10/01/2024

Asset: EF1 AREA:

Unit Data		
	Design	**Actual**
MFG	GREENHECK	CAPTIVEAIRE
Model Num	CUE-100A	DU33HFA
Serial Num	-	6301231
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TELCO GREEN
Frame	-	NL
Horsepower	0.33	1/3
Motor Rpm	-	1800
Phase	1	1
Voltage (rated)	120	115
Amperage (rated)	-	4.3
Service Factor	-	NL

Test Data		
	Design	**Actual**
CFM	750	754
Fan RPM	1725	1210
Fan Rotation	-	CCW
Motor RPM	-	1210
System SetPt	-	64%
RL Voltage	-	119
RL Amperage	-	1.4
Total ESP	0.5"	0.11”
Fan Inlet SP	-	-0.11”
Fan Discharge SP	-	ATM

Completed By: Gabe Merk on 10/01/2024

National TAB

Project: 09-30-24 SWEETGREEN HINGHAM , MA (TAB, IAQ)

System/Unit: FAN - Exhaust

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Asset: EF2 AREA:

Unit Data		
	Design	**Actual**
MFG	GREENHECK	CAPTIVEAIRE
Model Num	G-097-A	DR12HFA
Serial Num	-	6301231
Type	DOWNBLAST	DOWNBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TELCOGREEN
Frame	-	NL
Horsepower	0.25	0.25
Motor Rpm	-	1800
Phase	1	1
Voltage (rated)	120	115
Amperage (rated)	-	3.7
Service Factor	-	NL

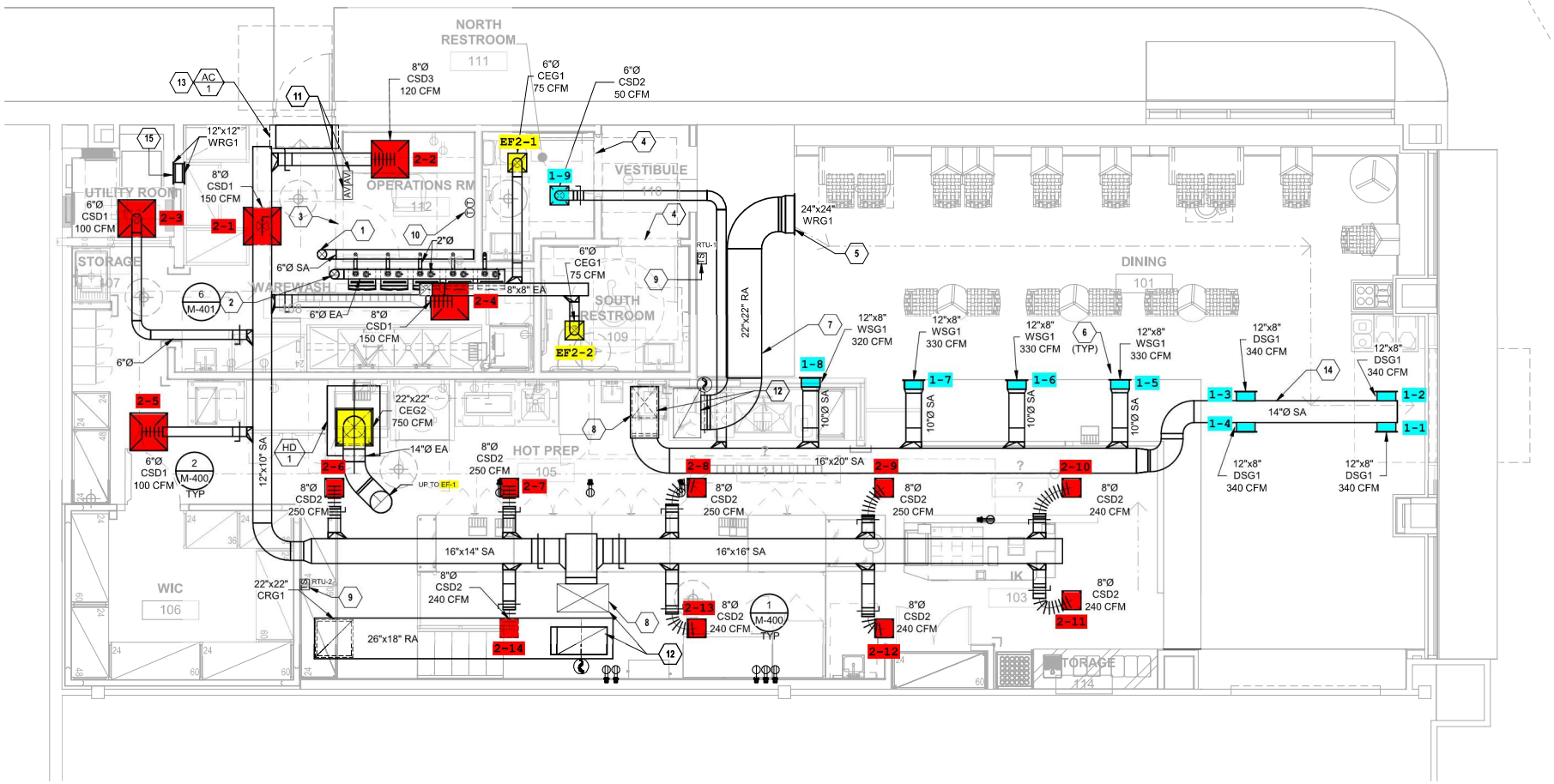
Test Data		
	Design	**Actual**
CFM	150	147
Fan RPM	1725	880
Fan Rotation	-	CCW
Motor RPM	-	880
System SetPt	-	49%
RL Voltage	-	N/A
RL Amperage	-	0.4
Total ESP	0.5"	0.21”
Fan Inlet SP	-	-0.21”
Fan Discharge SP	-	ATM

Completed By: Gabe Merk on 10/01/2024

Diffuser Ret/Exh (GRD)

EF2/

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
EGRD1	NORTH RR	CEG1	6"	75	1	146	102	79	105.3
EGRD2	SOUTH RR	CEG1	6"	75	1	54	26	68	90.7
Total				150		200	128	147	98%



1 HVAC FLOOR PLAN
1/4" = 1'-0"

Date: 10/9/2024