Report By:

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

Report: TAB REPORT

Function: Test, Adjust, & Balance

Date: 10/10/2023

PROJECT

10-09-23 NIKE UNITE - ANTIOCH, TN

4060 CANE RIDGE PARKWAY

ANTIOCH, TX 37013

Client

Lakeview Construction

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

Each of the RTU's were measured at their terminal devices utilizing a flow hood. The sum of these readings is equal to the total flow for that particular unit. The total flow of each RTU was then adjusted within tolerance of the specified design. Each terminal diffuser was balanced to within tolerance of the engineer's design volume utilizing the provided hand damper located at the takeoff of the main & branch trunk line(s). Any equipment that fell outside of this tolerance is noted throughout the report.

Variable Air Volume (VAV) Terminals

The VAV's were calibrated in a call for max cooling and the correction factors are reported on the individual asset. While in a call for full cooling, the individual air devices were then balanced within design tolerance. The VAVs were then stroked to minimum cool and the airflow values reported. The VAV was then stroked to heating and the airflow values reported. It was verified that there was a sufficient temp rise on each VAV.

General Exhaust Fans

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.

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	EMPLOYEE AREA	1320	1309	1145	1127	175	182	13.3%	13.9%						
RTU-2	STOCK ROOM	2580	2454	2255	2140	325	314	12.6%	12.8%						
RTU-3	SALES/FITTING	4500	4508	3300	3331	1200	1177	26.7%	26.1%						
RTU-4	SALES	4300	3953	3100	2716	1200	1237	27.9%	31.3%						
RTU-5	SALES	5055	5171	5055	5171	0	0	0.0%	0.0%						
EF-1	RESTROOM													325	341
EF-2	IT CLOSET													1000	978
TOTALS		17755	17395	14855	14485	2900	2910			0	0	0	0	1325	1319

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	2900	2910
TOTAL EXHAUST	1325	1319
NET AIRFLOW	1575	1591

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H20)
FRONT	0.019
SIDE	NA
REAR	0.021
AVERAGE	**0.02**

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

- TECH - STEP 1: INITIAL WALKTHROUGH
- TECH - STEP 2: UNIT DATA AND EVAL
- TECH - STEP 3: TEST, ADJUST AND BALANCE

10-09-23 NIKE UNITE - ANTIOCH, TN

CheckList Information

Name :	TECH - STEP 1: INITIAL WALKTHROUGH	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	10/09/2023 - Laura Robinson - National TAB		
Completed Date :	10/11/2023 - Jordan Best - 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:

Yes

All diffusers and grilles are installed and match design?

Comment:

Yes

Thermostats have power?

Comment:

Yes

All HVAC units and fans and powered and operational?

Comment:

Yes

VAV diffusers (if applicable) are powered and responding to adjustment at thermostat?

Comment:

Yes

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

Comment:

Yes

10-09-23 NIKE UNITE - ANTIOCH, TN

CheckList Information

Name :	TECH - STEP 2: UNIT DATA AND EVAL	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	10/09/2023 - Laura Robinson - National TAB		
Completed Date :	10/11/2023 - Jordan Best - 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:

Yes

Motors are all operating below the FLA rating?

Comment:

Yes

Are belts tight?

Comment:

NA

If direct drive unit is the speed controller working.

Comment:

Yes

Is gas piping installed and valves turned on?

Comment:

Yes

Unit free of noticeable noise and vibration

Comment:

Yes

EF's

Rotation is correct?

Comment:

Yes

Belts are tight?

Comment:

NA

Grease cup installed on hood fan

Comment:

NA

Hinge kit installed installed on hood fan?

Comment:

NA

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

Comment:

NA

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

Comment:

NA

There is no major leakage around base of fan?

Comment:

No

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

DOCUMENTATION

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

Comment:

Yes

10-09-23 NIKE UNITE - ANTIOCH, TN

CheckList Information

Name :	TECH - STEP 3: TEST, ADJUST AND BALANCE	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	10/09/2023 - Laura Robinson - National TAB		
Completed Date :	10/11/2023 - Jordan Best - 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:

Yes

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

Comment:

NA

FABRIC DUCT STATIC PRESSURES (IF APPLICABLE)

Take static pressures near takeoff for each fabric duct once balancing is completed. Input this into the "VEL (1)" field on the diffuser asset. If not a fabric duct then, put "N/A" into the "VEL (1)" field instead.

Comment:

RTU-3 0.41” / 0.32” / 0.37” / 0.38” RTU-4 0.32” / 0.43”/ 0.34” / 0.39” RTU-5 0.27”

National TAB

Project: 10-09-23 NIKE UNITE - ANTIOCH, TN

System/Unit: AHU/RTU

Asset: RTU 1 AREA:MULTI-ZONE

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Serial Num	-	5842712
Model Num	CASRTU-1-E.154-15	CASRTU-1-E.154-15-5T
Type	-	DOAS
Configuration	-	Vertical
Num OA Filters 1	-	2
OA Filter Size 1	-	16” X 20” X 2”
Num Final Filter 1	-	8
Final Filter Size 1	-	16” X 16” X 2”

Motor Data		
	Design	**Actual**
Frame	-	145T
Horsepower	-	1.5
Motor Rpm	-	1740
Phase	-	3
Rated Voltage	-	230
Rated Amperage	-	4.03

Test Data		
	Design	**Actual**
SF CFM	1320	1309
RA CFM	-	1127
OA CFM	175	182
RL Voltage	-	357
RL Amperage	-	1.7
SF Rotation	-	CCW
Min OA Damper Position	-	5 VDC
Min OA Damper Type	-	ECON

General		
	Design	**Actual**
Fan Rotation Correct	-	Yes
Unit Filters Clean	-	Yes

Completed By: Jordan Best on 10/11/2023

National TAB

Project:10-09-23 NIKE UNITE - ANTIOCH, TN

AHU/RTU

Diffuser Supply (GRD)

RTU 1/MULTI-ZONE

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
RTU 1-SGRD1	ASM OFFICE	CSD1	8"	150	1	101	143	143	95.3
RTU 1-SGRD2	ASM OFFICE	CSD1	8"	150	1	149	162	162	108.0
RTU 1-SGRD3	HC OFFICE	CSD1	8"	120	1	144	128	128	106.7
RTU 1-SGRD4	LOUNGE	CSD2	8"	225	1	197	232	232	103.1
RTU 1-SGRD5	LOUNGE	CSD2	8"	225	1	181	227	227	100.9
RTU 1-SGRD6	LOUNGE	CSD2	8"	225	1	224	229	229	101.8
RTU 1-SGRD7	MEN'S RR	CSD3	6"	50	1	76	51	51	102.0
RTU 1-SGRD8	LOUNGE	CSD2	8"	125	1	176	129	129	103.2
RTU 1-SGRD9	WOMEN'S RR	CSD3	6"	50	1	61	53	53	106.0
Total				1320		1309	1354	1354	102.58%

National TAB

Project: 10-09-23 NIKE UNITE - ANTIOCH, TN

System/Unit: AHU/RTU

Asset: RTU 2 AREA:SINGLE ZONE

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Serial Num	-	5482712
Model Num	CASRTU-1-E.304-18	CASRTU-1-E.304-18-7.5T
Type	-	DOAS
Configuration	-	Vertical
Num OA Filters 1	-	2
OA Filter Size 1	-	16” X 20” X 2”
Num Final Filter 1	-	8
Final Filter Size 1	-	16” X 16” X 2”

Motor Data		
	Design	**Actual**
Frame	-	NA
Horsepower	-	5
Motor Rpm	-	2900
Phase	-	3
Rated Voltage	-	460
Rated Amperage	-	5.4

Test Data		
	Design	**Actual**
SF CFM	2580	2454
RA CFM	-	2140
OA CFM	325	314
RL Voltage	-	490.7/490.2/485.1
RL Amperage	-	1.68/1.81/1.69
SF Rotation	-	CCW
Min OA Damper Position	-	5.6 VDC
Min OA Damper Type	-	ECON

General		
	Design	**Actual**
Fan Rotation Correct	-	Yes
Unit Filters Clean	-	Yes

Completed By: Jordan Best on 10/11/2023

National TAB

Project:10-09-23 NIKE UNITE - ANTIOCH, TN

AHU/RTU

Diffuser Supply (GRD)

RTU 2/SINGLE ZONE

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
RTU 2-SGRD1	IT	CSD2	10"	290	1	291	267	267	92.1
RTU 2-SGRD2	STOCK ROOM	CSD2	10"	290	1	297	284	284	97.9
RTU 2-SGRD3	STOCK ROOM	CSD2	10"	290	1	272	271	271	93.4
RTU 2-SGRD4	STOCK ROOM	CSD2	10"	290	1	287	293	293	101.0
RTU 2-SGRD5	STOCK ROOM	CSD2	10"	290	1	245	284	284	97.9
RTU 2-SGRD6	STOCK ROOM	CSD2	10"	290	1	290	268	268	92.4
RTU 2-SGRD7	STOCK ROOM	CSD2	10"	290	1	260	261	261	90.0
RTU 2-SGRD8	STOCK ROOM	CSD2	10"	290	1	224	284	284	97.9
RTU 2-SGRD9	STOCK ROOM	CSD2	10"	260	1	187	242	242	93.1
Total				2580		2353	2454	2454	95.12%

National TAB

Project: 10-09-23 NIKE UNITE - ANTIOCH, TN

System/Unit: AHU/RTU

Asset: RTU 3 AREA:FITTING

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Serial Num	-	5842712
Model Num	CASRTU-1-E.604-20	CASRTU-3-E.604-24-15T
Type	-	DOAS
Configuration	-	Vertical
Num OA Filters 1	-	4
OA Filter Size 1	-	16” X 25” X 2”
Num Final Filter 1	-	8
Final Filter Size 1	-	20” X 25” X 2”

Motor Data		
	Design	**Actual**
Frame	-	215T
Horsepower	-	5
Motor Rpm	-	1165
Phase	-	3
Rated Voltage	-	230
Rated Amperage	-	14.3

Test Data		
	Design	**Actual**
SF CFM	4500	4508
RA CFM	-	3331
OA CFM	1200	1177
RL Voltage	-	378
RL Amperage	-	6.6
SF Rotation	-	CCW
Min OA Damper Position	-	5.8VDC
Min OA Damper Type	-	ECON

General		
	Design	**Actual**
Fan Rotation Correct	-	Yes
Unit Filters Clean	-	Yes

Completed By: Jordan Best on 10/16/2023

Diffuser Supply (GRD)

RTU 3/FITTING

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
RTU 3-SGRD1	SALES	FABRIC DUCT	14”	975	1.06	828	1106	963	98.8
RTU 3-SGRD2	SALES	FABRIC DUCT	14”	975	1.06	977	1167	1016	104.2
RTU 3-SGRD3	SALES	FABRIC DUCT	14”	975	1.06	948	1189	982	100.7
RTU 3-SGRD4	SALES	FABRIC DUCT	14”	975	1.06	814	1044	964	98.9
VAV1	FITTING	VAV	NA	600	NA	484	0	583	97.2
Total				4500		4051	4506	4508	100.18%

National TAB

Project:10-09-23 NIKE UNITE - ANTIOCH, TN

VAV - Single Duct

HVAC EQUIPMENT/

Asset									
Asset Name	**Type**	**Inlet Size**	**Design Max CFM**	**Max CFM**	**Design Min CFM**	**Min CFM**	**Design Heat CFM**	**Heat CFM**	**Ak (max)**
VAV1	VAV	10	600	550	300	287	543	543	1

Completed By: Jordan Best on 10/16/2023

Diffuser Supply (GRD)

VAV1/

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
SGRD1	FITTING ROOMS	6	6	100	1	84	97	97	97.0
SGRD2	FITTING ROOMS	6	6	100	1	76	103	103	103.0
SGRD3	FITTING ROOMS	6	6	100	1	68	92	92	92.0
SGRD4	FITTING ROOMS	6	6	100	1	77	94	94	94.0
SGRD5	FITTING ROOMS	6	6	100	1	92	103	103	103.0
SGRD6	FITTING ROOMS	6	6	100	1	87	94	94	94.0
Total				600		484	583	583	97.17%

Completed By: Jordan Best on 10/16/2023

National TAB

Project: 10-09-23 NIKE UNITE - ANTIOCH, TN

System/Unit: AHU/RTU

Asset: RTU 4 AREA:MULTI-ZONE

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Serial Num	-	5482712
Model Num	CASRTU-1-E.604-18	CASRTU-3-E.604-18-15T
Type	-	DOAS
Configuration	-	Vertical
Num OA Filters 1	-	4
OA Filter Size 1	-	16” X 25” X 2”
Num Final Filter 1	-	8
Final Filter Size 1	-	20” X 25” X 2”

Motor Data		
	Design	**Actual**
Frame	-	184T
Horsepower	-	5
Motor Rpm	-	1750
Phase	-	3
Rated Voltage	-	230
Rated Amperage	-	13.6

Test Data		
	Design	**Actual**
SF CFM	4300	3953
RA CFM	-	2716
OA CFM	1200	1237
RL Voltage	-	454
RL Amperage	-	6.3
SF Rotation	-	CCW
Min OA Damper Position	-	5.8 VDC
Min OA Damper Type	-	ECON

General		
	Design	**Actual**
Fan Rotation Correct	-	Yes
Unit Filters Clean	-	Yes

Completed By: Jordan Best on 10/11/2023

Notes:
FAN SPEED IS MAXIMIZED

Written By: Will Turnbough on 11/01/2023

National TAB

Project:10-09-23 NIKE UNITE - ANTIOCH, TN

AHU/RTU

Diffuser Supply (GRD)

RTU 4/MULTI-ZONE

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
RTU 4-SGRD1	SALES	FABRIC DUCT	14”	1075	1.06	497	1020	1020	94.9
RTU 4-SGRD2	SALES	FABRIC DUCT	14”	1075	1.06	873	1001	1001	93.1
RTU 4-SGRD3	SALES	FABRIC DUCT	14”	1075	1.06	574	895	895	83.3
RTU 4-SGRD4	SALES	FABRIC DUCT	14”	1075	1.06	1004	1037	1037	96.5
Total				4300		2948	3953	3953	91.93%

Asset	Notes	Date	Written By
RTU 4-SGRD3	DIFFUSER BALANCED PROPORTIONALLY LOW. TOTAL FLOW IS WITHIN TOLERANCE BUT AT THE LOW END OF TOLERANCE. UNABLE TO INCREASE FURTHER. NOT ANTICIPATED TO CAUSE ANY COMFORT ISSUES.	11/01/2023	Will Turnbough

National TAB

Project: 10-09-23 NIKE UNITE - ANTIOCH, TN

System/Unit: AHU/RTU

Asset: RTU 5 AREA:MULTI-ZONE

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Serial Num	-	5482712
Model Num	CASRTU-1-E.604-24	CASRTU-1-E.604-24
Type	-	DOAS
Configuration	-	Vertical
Num OA Filters 1	-	4
OA Filter Size 1	-	16” X 25” X 2”
Num Final Filter 1	-	8
Final Filter Size 1	-	20” X 25” X 2”

Motor Data		
	Design	**Actual**
Frame	-	215T
Horsepower	-	5
Motor Rpm	-	1165
Phase	-	3
Rated Voltage	-	430
Rated Amperage	-	14.3

Test Data		
	Design	**Actual**
SF CFM	5055	5171
SF RPM	-	63 HZ
RA CFM	-	5171
OA CFM	0	0
RL Voltage	-	446
RL Amperage	-	7.2
SF Rotation	-	CCW
RA Damper Position	-	100%
Min OA Damper Position	-	0
Min OA Damper Type	-	ECON

General		
	Design	**Actual**
Fan Rotation Correct	-	Yes
Unit Filters Clean	-	Yes

Completed By: Jordan Best on 10/11/2023

Diffuser Supply (GRD)

RTU 5/MULTI-ZONE

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
SGRD1	ENTRY/CASH REGISTER	Round Fabric Duct	26"	5055	3.14	4653	5171	5171	102.3
Total				5055		4653	5171	5171	102.29%

National TAB

Project: 10-09-23 NIKE UNITE - ANTIOCH, TN

System/Unit: FAN - Exhaust

Asset: EF1 AREA:

Unit Data		
	Design	**Actual**
MFG	GREENHECK	GREENHECK
Model Num	G-080-VG	G-080-VG-1-17-X
Serial Num	-	22180861
Type	-	Downblast
Configuration	-	Vertical

Motor Data		
	Design	**Actual**
Motor MFG	-	Vari-Green
Frame	-	NA
Horsepower	-	0.1
Motor Rpm	-	1750
Phase	-	1
Voltage (rated)	-	208
Amperage (rated)	-	1.38
Service Factor	-	NA
Efficiency	-	NA

Test Data		
	Design	**Actual**
CFM	325	341
Fan RPM	-	NA
Fan Rotation	-	CCW
Motor RPM	-	NA
System SetPt	-	10
RL Voltage	-	122
RL Amperage	-	1.26
Total ESP	-	0.14”
Fan Inlet SP	-	0.14”
Fan Discharge SP	-	ATM

Completed By: Jordan Best on 10/16/2023

Notes:
Speed controller set at 10/10

Written By: Jordan Best on 10/10/2023

National TAB

Project:10-09-23 NIKE UNITE - ANTIOCH, TN

FAN - Exhaust

Diffuser Ret/Exh (GRD)

EF1/

Asset												
Asset Name	Model Num	MFG	Type	Size	DESIGN CFM	AK	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design
EF1-EGRD1	NA	NA			115	1		142		118	118	102.6
EF1-EGRD2	NA	NA			115	1		98		120	120	104.3
EF1-EGRD3	NA	NA			95	1		109		103	103	108.4
Total					325			349		341	341	104.92%

Completed By: Jordan Best on 10/16/2023

Asset	Notes	Date	Written By
EF1-EGRD1	Men's RR	10/10/2023	Jordan Best
EF1-EGRD2	Women's RR	10/10/2023	Jordan Best
EF1-EGRD3	Janitors Closet	10/10/2023	Jordan Best

National TAB

Project: 10-09-23 NIKE UNITE - ANTIOCH, TN

System/Unit: FAN - Exhaust

Asset: EF2 AREA:

Unit Data		
	Design	**Actual**
MFG	GREENHECK	GREENHECK
Model Num	SQ-100-VG	SQ-100-VG
Serial Num	-	NA
Type	-	Ceiling
Configuration	-	Horizontal

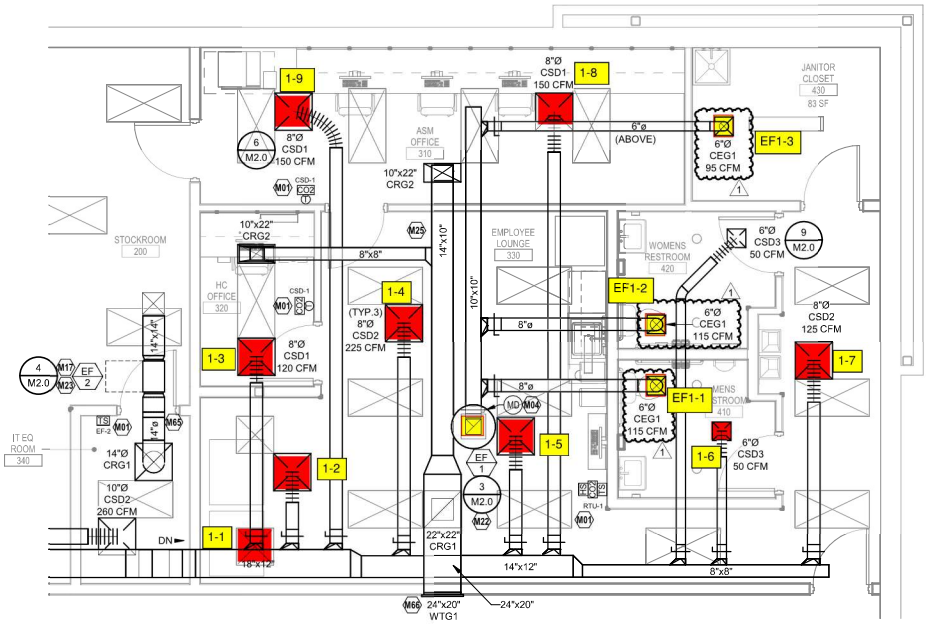
Motor Data		
	Design	**Actual**
Motor MFG	-	NA
Frame	-	NA
Horsepower	-	NA
Motor Rpm	-	NA
Phase	-	NA
Voltage (rated)	-	NA
Amperage (rated)	-	NA
Service Factor	-	NA

Test Data		
	Design	**Actual**
CFM	1000	978
Fan RPM	-	NA
Fan Rotation	-	CCW
Motor RPM	-	NA
System SetPt	-	10
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	-	NA
Fan Inlet SP	-	NA
Fan Discharge SP	-	ATM

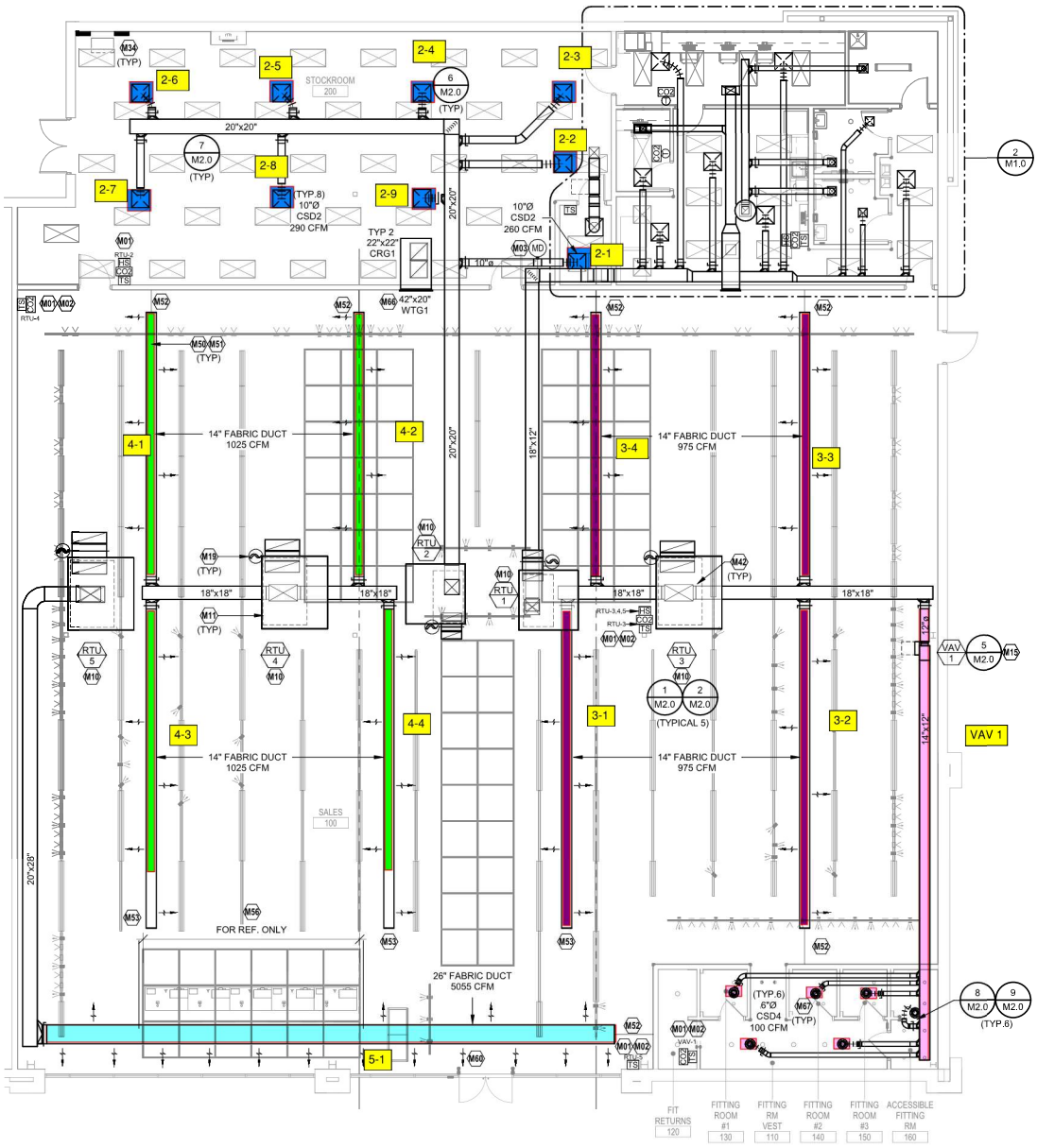
Completed By: Jordan Best on 10/11/2023

Notes:
IT Room. Fan speed fully maximized.

Written By: Jordan Best on 10/10/2023



② ENLARGED BACK OF HOUSE HVAC PLAN
1/4" = 1'-0"



① HVAC PLAN
1/8" = 1'-0"