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: 01/09/2023

PROJECT

01-02-23 WALGREENS #3840 - BURIEN, WA

14656 AMBAUM BLVD SW

BURIEN, WA 98166

Client

Walgreens

200 WILMOT RD

DEERFIELD, IL 60015

National TAB

Project: 01-02-23 WALGREENS #3840 - BURIEN, WA

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.

Commissioning Activities
Equipment was inspected to ensure that the installation meets Walgreens requirements. Control and equipment setpoints were checked and after balancing was completed performance of each unit was verified. The full list of items that were verified along with any that failed are contained in the checklists in this report.

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 per Walgreens standards. Each outlet was then adjusted to within tolerance. 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. 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.

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01-02-23 WALGREENS #3840 - BURIEN, WA

Project Issue Information

Issue Name : EF-1 and EF-4 not operational.

Description : EF-1 and EF-4 are not operational. No power at the units.

Created By : National TAB **Assigned To :** National TAB - Will Turnbough

Status : Open

Originated Date : 01/05/2023 - Zack Eismin - National TAB

Comfort. Under control.

01-02-23 WALGREENS #3840 - BURIEN, WA

Project Issue Information

Issue Name : EF-5 is not attached to ductwork.

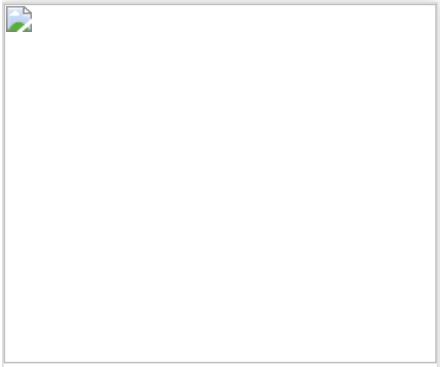
Description : EF-5 is not attached to any ductwork and the ductwork that is installed is not attached to the roof.

Created By : National TAB **Assigned To :** National TAB - Will Turnbough

Status : Open

Originated Date : 01/05/2023 - Zack Eismin - National TAB

Project Issue File Details



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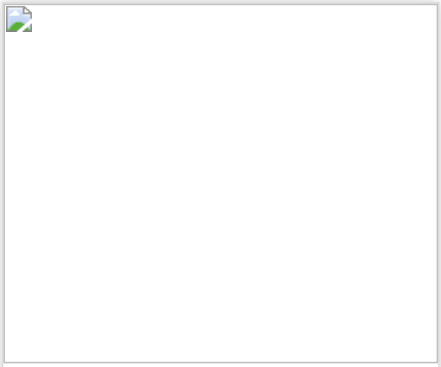

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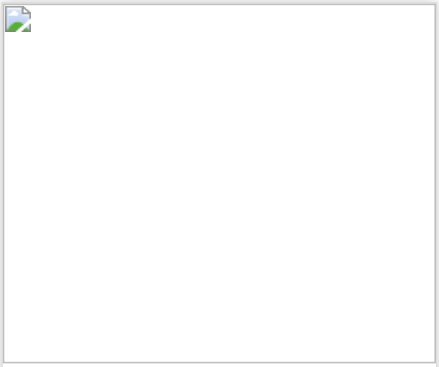

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NATIONAL TAB

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	PANEL AREA	2625	2513	2137	2011	488	502	18.6%	20.0%						
RTU-2	FOOD MART	2625	2804	2237	2393	388	411	14.8%	14.7%						
RTU-3	SALES/COS.	2275	2170	2175	2076	100	94	4.4%	4.3%						
RTU-4	GEN.SALES	2625	2873	2137	2382	488	491	18.6%	17.1%						
RTU-5	P.SEATING	1050	989	1050	989	0	0	0.0%	0.0%						
RTU-6	0GEN. STOCK	1050	1047	950	940	100	107	9.5%	10.2%						
EF-1	EMP. ROOM													300	0
EF-2	M. RESTROOM													200	116
EF-3	WOMEN'S RR													200	126
EF-4	PHOTO													750	0
EF-5	OFFICE													300	153
EF-6	MEZZANINE													500	NA
EF-7	MEZZANINE													500	NA
TOTALS		12250	12396	10686	10791	1564	1605			0	0	0	0	2750	395

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	1564	1605
TOTAL EXHAUST	2750	395
NET AIRFLOW	-1186	1210

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

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:

EF 1 AND 4 ARE NOT FUNCTIONAL.

Comfort. Under control.

01-02-23 WALGREENS #3840 - BURIEN, WA

CheckList Information

Name :	TECH - 01 RTU INSTALLATION CHECKLIST	**Status :**	NotSubmitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

General / Exterior Inspections	
Verify all required equipment has been replaced per TA and BOM.	Pass
All units are installed in the proper locations	Pass
Units are labeled correctly	Fail
Asset tag installed	Pass
Roof is clear of debris.	Pass
Maintenance access for all unit access panels is acceptable and panels open freely.	Pass
Cabinet and general installation is complete.	Pass
Unit is secure to curb and level horizontally and vertically.	Pass
Access doors close tightly with no leaks	Pass
Condensate and gas piping is properly supported.	Pass
Costgaurd is installed per scope of work and piping unions are cemented.	Pass
Additional Comments	
Interior Inspections	
Fan rotation is correct	Pass
Pulleys are correctly aligned and both motor and fan sheave pins are tightened in place.	Pass

Return air and outside air dampers close tightly with no gaps	Pass
Cabinet and coils are not damaged and in like new condition.	Pass
Inside of unit is clean and clear of debris.	Pass
Validate condesate is piped to splash block, draing, or roof drain per code requirements	Pass
Verify filters are installed, clean and of proper size. Verify there is no air by-pass around filters.	Fail
Curb is sealed with no air leakage.	Pass
Additional Comments:	
Fire/Smoke Alarm Systems	
In duct smoke detectors are installed	Pass
Fire alarm panel status (visual inspection where possible)	
Additional Comments:	
Electrical	
Electrical wiring is complete with no visible damage	Pass
Electrical connections are tight with sealtight around any unit penetrations.	Pass
Disconnect switch is installed in accessible location near or on unit.	Pass
Verify overcurrent protection is HACR type, installed and sized correctly and labeled in panel.	Pass
Maintenance electrical outlet is installed and functional.	Pass
Main distribution panel is labeled correctly.	Pass
Unit ground wire is secured.	Pass
Additional Comments:	

Notes/Comments :

Comfort. Under control.

01-02-23 WALGREENS #3840 - BURIEN, WA

CheckList Information

Name :	TECH - 02 EXHAUST FANS INSPECTIONS	**Status :**	NotSubmitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

Fan rotation is correct	Pass
Pulleys are aligned and belts are tensioned properly	N/A
Speed controller installed and functional (direct drive)	NO
Fan is secured to the curb	Pass
Back draft damper is installed and functional	Pass
No exterior damage to the fan	Pass
No unusual noise or vibration	Pass
Controls are functional	Fail
Additional Comments:	

Notes/Comments :

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01-02-23 WALGREENS #3840 - BURIEN, WA

CheckList Information

Name : TECH - 03 START-UP CONTROLS PROGRAMMING **Status :** NotSubmitted

Assigned Organization : National TAB **Asset :**

Requesting Organization : National TAB

CheckList Item Details

Programming: SE 3.3, 3.4, 4.0

Controller-Network-Address: RTU number + 3	Fail
Controller-Network-FCBusMode = Wired Field Bus	Pass
Controller-Network-BaudRate = Auto	Pass
Controller-Network-Device ID = RTU number + 3	Fail
Details-Occ-OffDurUnocc = No	Pass
Details-Clg-Setup-Clg-En = Yes	Pass
Details-Clg-Setup-ClgAdapTunEn = Yes	Pass
Details-Htg-Setup-Htg-En = Yes	Pass
Details-Htg-Setup-#HtgStgs = 2 Stages	Pass
Details-Htg-Setup-HtgAdapTunEn = Yes	Pass
Details-Htg-Setup-#GasVlvs = 1 (Set to 0 for Hp and Elect Heat)	Pass
Details-Fan-Setup-Fan Ctl-Type = No VFD select "Single Speed", W/VFD select "Fixed Variable"	Pass
Details-Fan-Setup-FanOnOcc = Yes	Pass
Details-Fan-Setup-FanOnDlyHeat = 30s (Set to 0 for HP or Electric Heat)	Pass
Details-Fan-Setup-FanOnly-%Cmd = 50%	Pass

Details-Fan-Setup-1ClgStg-%Cmd = 70%	Pass
Details-Fan-Setup-2Clgstg-%Cmd = 100% (2stage Unit) or 80% (3 and 4 stage)	Pass
Details-Fan-Setup-3ClStg-%Cmd = 100% (3 stage unit) or 90% (4 stage)	Pass
Details-Fan-Setup-4ClStg-%Cmd = 100% (4 Stage unit)	Pass
Details-Fan-Setup-1HtgStg-%Cmd = 100%	Pass
Details-Fan-Setup-2HtgStg-%Cmd = 100%	Pass
Details-Econ-Setup-Econ-En = Yes	Pass
Details-Econ-Setup-Econ-MinPos = Set to minimum outside air requirements.	Pass
Details-Econ-Setup-LowSpdFan-MinPos = Set minimum 1% above EconMinPos	Pass
Details-Econ-Setup-FreeClg-Sel = Single Enthalpy	Pass
Details-Econ-Setup-EconOAEnth-Sp 4= 24 Btu/lb	Pass
Details-Econ-Setup-Dvent-Mode = Enable	Pass
Details-Econ-Setup-DventMaxEconPos = 50%	Pass
Details-Econ-Setup-DventIAP-Sp = 1000	Pass
Details-Econ-Setup-EconFltDetectEn = Enable	Pass
Additional Comments:	
Non ZR Units only:	
Details-HGR-Setup-HGR-En = No	Pass
Details-HGR-Setup-HGRAlt-En = No	Pass
Details - HGR-Setup-HGRUnocc-En = No	Pass
Details-HGR-Setup-Mode = No	Pass
Additional Comments:	
ZR Units - Reheat Units only:	
Details-HGR-Setup-HGR-En = Yes	Pass
Details-HGR-Setup-HGRAlt-En = Yes	Pass

Details - HGR-Setup-HGRUnocc-En = Yes	Pass
Details-HGR-Setup-Mode = No	Pass
Additional Comments:	

Notes/Comments :

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01-02-23 WALGREENS #3840 - BURIEN, WA

CheckList Information

Name : TECH - 04 EMS/SENSOR VALIDATION **Status :** NotSubmitted

Assigned Organization : National TAB **Asset :**

Requesting Organization : National TAB

CheckList Item Details

RTU supply air temp sensor location located per start-up binder.	Pass
RTU return air temp sensor location located per start-up binder.	Pass
RTU return air smoke detector (when applicable) is located per start-up binder.	Pass
Space temperature sensor has been replaced and location meets requirements.	Pass
Space humidity sensor has been replaced and location meets requirements.	Pass
Unit is being controlled by a space temperature sensor or thermostat	Pass
EMS has been connected and validated with TOC or Gridpoint. Screen shot is available.	STANDALONE THERMOSTATS - NO EMS
No splicing of EMS/Sensor/Thermostat wiring is visible	Pass
(If Applicable) 2 Stage Thermostat to SE Board Control Wiring meets detail in start-up binder.	NA
(If Applicable) 2 Stage Thermostat to 4 Stage Unit meets detail in start-up binder.	NA
(If Applicable) 4 Stage Thermostat to 4 Stage Unit meets detail in start-up binder.	NA
(If Applicable) 3 Stage Thermostat wiring meets detail in start-up binder.	NA
(If Applicable) 3 Stage Thermostat with Humidity sensor wiring meets detail in start-up binder.	NA

(If Applicable) EH Thermostat with SCR control wiring meets detail in start-up binder.	NA
Temperature setpoints are set for correction region and space (see ASHRAE / temperature setpoint chart in procedure)	NA
Additional Comments:	

Notes/Comments :

Comfort. Under control.

01-02-23 WALGREENS #3840 - BURIEN, WA

CheckList Information

Name : TECH - 05 TAB CHECKLIST

Status : NotSubmitted

Assigned Organization : National TAB

Asset :

Requesting Organization : National TAB

CheckList Item Details

Outside air damper set to minimum air flow requirement and damper position marked.	Pass
Total Supply, return, and outside air volumes meet design tolerances (+/-10%)	Pass
Enclosed area diffusers (Pharmacies, manager office, employee room, restrooms, electrical rooms) balanced within +/-10%?	Pass
Open area diffusers (Sales floor and stock room) balanced within +/-25% of design?	Pass
Store pressure meets tolerances (see formula in balance schedule). Make sure to account for existing exhaust fans airflows as shown on original drawings that are non-functioning.	Pass
Outside air and return air dampers modulate freely.	Pass
Start-up report from the installing contractor is reviewed and all information if filled out. All required measurements are within typical ranges.	Pass
(If Applicable) VFD is set-up and operational. (N/A = not applicable)	YES
Verify amp draw of motor is within unit specification, not operating in overamped condition.	Pass
Sales floor temperature and humidity measurement	65 DEGREES 30.5%RH
Pharmacy temperature and humidity measurement	70.1 DEGREES 31.8%RH
Stock Room temperature and humidity measurement	66.0 DEGREES 30.1%RH
Outdoor air temperature and humidity measurement	55.8 DEGREES 32.3%RH

Additional Comments:

Notes/Comments :

Comfort. Under control.

01-02-23 WALGREENS #3840 - BURIEN, WA

CheckList Information

Name :	TECH - 06 FUNCTIONAL TESTS	**Status :**	NotSubmitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

Cooling Functional Test	
Overwrite the thermostat or sensor to put the unit into cooling mode.	Pass
Compressors enable.	Pass
If fan has VFD, the fan increases speed.	Pass
Document the discharge air temperature.	TOO COLD TO TEST
After 10 minutes, Discharge air temperature is below 55 degrees.	
Cooling mode is operational	Pass
Additional Comments:	
Heating Functional Test	
Overwrite the thermostat or sensor to put the unit into heating mode.	DUE TO TROUBLESHOOTING VERY HIGH FLOW ON 2 RTU'S AND PERFORMING PULLEY CHANGES, RAN OUT OF TIME TO TEST HEATING.
Heat exchanger enables.	NA
If fan has VFD, the fan increases speed.	NA
Document the discharge air temperature.	NA
After 10 minutes, Discharge air temperature is above 85 degrees.	NA
Heating mode is operational	NA

Additional Comments	
Dehumidification Functional Test	
Overwrite the humidistat to put the unit into dehumidification mode.	NA
Compressors enable.	NA
Hot Gas Reheat Valve opens	NA
If fan has VFD, the fan increases speed.	NA
Document the discharge air temperature.	NA
Dehumidification Mode is operational. (Pass/Fail/NA)	NA
Additional Comments:	
Economizer Functional Test	
Overwrite the humidistat to put the unit into economizer mode.	NA
Economizer modulates from minimum position to 100% open. (Pass/Fail/NA)	NA
Additional Comments:	

Notes/Comments :

National TAB

Project: 01-02-23 WALGREENS #3840 - BURIEN, WA

System/Unit: AHU/RTU

Comfort. Under control.

Asset: RTU1 AREA:SALES

Unit Data		
	Design	**Actual**
MFG	YORK	YORK
Serial Num	-	N2K2996884
Model Num	ZJ090N12R2B5GCB2R2	ZJ090N12R2B5GCB2R2
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	20X29
Num Final Filter 1	-	2
Final Filter Size 1	-	21X45X2

Test Data		
	Design	**Actual**
SF CFM	2625	2513
SF RPM	987	829
RA CFM	2137	2011
OA CFM	488	502
RL Voltage	-	209/208/209
RL Amperage	-	8.1/8.2/8.1
SF Rotation	-	CCW
RA Damper Position	-	80%
Min OA Damper Position	-	20%
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	SP4

Motor Data		
	Design	**Actual**
Motor MFG	-	BALDOR RELIANCE
Frame	-	56HZ
Horsepower	3	3
Motor Rpm	-	1750
Phase	3	3
Rated Voltage	230	230/460
Rated Amperage	-	8.2/4.1

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.59"
Fan Suction SP	-	-0.78"
Fan Discharge SP	-	1.09"
Total ESP	1.2"	1.68"
Fan Total SP	-	1.87"

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	1VM50
Motor Bore Size	-	7/8"
Motor Sheave SetPt	-	5 TURNS OPEN
Fan Sheave Size	-	8"
Fan Sheave Bore	-	1"
Belt CL Distance	-	19.5"
Num of Belts	-	1
Belt Size	-	A54
Belt Alignment	-	VERIFIED

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

Completed By: Zack Eismin

Notes:

National TAB

Project:01-02-23 WALGREENS #3840 - BURIEN, WA

AHU/RTU

Comfort. Under control.

Diffuser Supply (GRD)

RTU1/SALES

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
SGRD1	SALES	NA	NA	437.5	1	402	412	412	94.2
SGRD2	SALES	NA	NA	656	1	622	639	639	97.4
SGRD3	SALES	NA	NA	175	1	182	172	172	98.3
SGRD4	SALES	NA	NA	175	1	191	181	181	103.4
SGRD5	SALES	NA	NA	175	1	229	171	171	97.7
SGRD6	SALES	NA	NA	175	1	275	165	165	94.3
SGRD7	SALES	NA	NA	415	1	321	391	391	94.2
SGRD8	SALES	NA	NA	415	1	312	382	382	92.0

Completed By: Brianna Biggs on

National TAB

Project: 01-02-23 WALGREENS #3840 - BURIEN, WA

System/Unit: AHU/RTU

Comfort. Under control.

Asset: RTU2 AREA:SALES

Unit Data		
	Design	**Actual**
MFG	YORK	YORK
Serial Num	-	N2L2019508
Model Num	ZR090N12R2B5GCB2R1	ZR090N12R2B5GCB2R1
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	20X29
Num Final Filter 1	-	2
Final Filter Size 1	-	17X51

Test Data		
	Design	**Actual**
SF CFM	2625	2804
SF RPM	1314	923
RA CFM	2237	2393
OA CFM	388	411
RL Voltage	-	208/209/207
RL Amperage	-	7.5/7.8/8
SF Rotation	-	CCW
RA Damper Position	-	85%
Min OA Damper Position	-	15%
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	SP4

Motor Data		
	Design	**Actual**
Motor MFG	-	BALDOR RELIANCE
Frame	-	56HZ
Horsepower	3	3
Motor Rpm	-	1750
Phase	3	3
Rated Voltage	230	230/460
Rated Amperage	-	8.2/4.1

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.55"
Fan Suction SP	-	-0.82"
Fan Discharge SP	-	0.71"
Total ESP	1.2"	1.26"
Fan Total SP	-	1.53"

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	1VM50
Motor Bore Size	-	7/8"
Motor Sheave SetPt	-	5 TURNS OPEN
Fan Sheave Size	-	AK61
Fan Sheave Bore	-	1"
Belt CL Distance	-	18"
Num of Belts	-	1
Belt Size	-	A49
Belt Alignment	-	VERIFIED

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

Completed By: Zack Eismin

Notes:

National TAB

Project:01-02-23 WALGREENS #3840 - BURIEN, WA

AHU/RTU

Comfort. Under control.

Diffuser Supply (GRD)

RTU2/SALES

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
SGRD1	SALES	NA	NA	368	1	372	397	397	107.9
SGRD2	SALES	NA	NA	368	1	332	401	401	109.0
SGRD3	SALES	NA	NA	368	1	472	401	401	109.0
SGRD4	SALES	NA	NA	368	1	427	419	419	113.9
SGRD5	SALES	NA	NA	368	1	399	399	399	108.4
SGRD6	SALES	NA	NA	368	1	397	395	395	107.3
SGRD7	SALES	NA	NA	138	1	127	131	131	94.9
SGRD8	SALES	NA	NA	138	1	215	132	132	95.7
SGRD9	SALES	NA	NA	138	1	231	129	129	93.5

Completed By: Brianna Biggs on

National TAB

Project: 01-02-23 WALGREENS #3840 - BURIEN, WA

System/Unit: AHU/RTU

Comfort. Under control.

Asset: RTU3 AREA:SALES

Unit Data		
	Design	**Actual**
MFG	YORK	YORK
Serial Num	-	N2E2377579
Model Num	ZT078N12R2B5GCB2R1	ZT078N12R2B5GCB2R1
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	29X20
Num Final Filter 1	-	2
Final Filter Size 1	-	21X46X2

Test Data		
	Design	**Actual**
SF CFM	2275	2170
SF RPM	974	823
RA CFM	2175	2076
OA CFM	100	94
RL Voltage	-	209/208/208
RL Amperage	-	5.6/5.4/5.6
SF Rotation	-	CCW
RA Damper Position	-	90%
Min OA Damper Position	-	10%
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	SP4

Motor Data		
	Design	**Actual**
Motor MFG	-	BALDOR RELIANCE
Frame	-	56HZ
Horsepower	2	2
Motor Rpm	-	1750
Phase	3	3
Rated Voltage	230	230/460
Rated Amperage	-	5.8/2.9

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.56"
Fan Suction SP	-	-0.58
Fan Discharge SP	-	0.63"
Total ESP	1.2"	1.19"
Fan Total SP	-	1.21"

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	1VM50
Motor Bore Size	-	7/8"
Motor Sheave SetPt	-	5 TURNSBOPEN
Fan Sheave Size	-	AK74
Fan Sheave Bore	-	1"
Belt CL Distance	-	19"
Num of Belts	-	1
Belt Size	-	A54
Belt Alignment	-	VERIFIED

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

Completed By: Zack Eismin

Notes:

Diffuser Supply (GRD)

RTU3/SALES

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
SGRD1	SALES	NA	NA	380	1	452	372	372	97.9
SGRD2	SALES	NA	NA	380	1	321	351	351	92.4
SGRD3	SALES	NA	NA	380	1	311	369	369	97.1
SGRD4	SALES	NA	NA	380	1	502	372	372	97.9
SGRD5	SALES	NA	NA	380	1	298	361	361	95.0
SGRD6	SALES	NA	NA	380	1	351	345	345	90.8

Completed By: Brianna Biggs on

National TAB

Project: 01-02-23 WALGREENS #3840 - BURIEN, WA

System/Unit: AHU/RTU

Comfort. Under control.

Asset: RTU4 AREA:SALES

Unit Data		
	Design	**Actual**
MFG	YORK	YORK
Serial Num	-	N2K2996885
Model Num	ZJ090N12R2B5GCB2R2	ZJ090N12R2B5GCB2R2
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	21X29
Num Final Filter 1	-	2
Final Filter Size 1	-	20X45X2

Motor Data		
	Design	**Actual**
Motor MFG	-	BALDOR RELIANCE
Frame	-	56HZ
Horsepower	3	3
Motor Rpm	-	1750
Phase	3	3
Rated Voltage	230	230/460
Rated Amperage	-	8.2/4.1

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	1VM50
Motor Bore Size	-	7/8"
Motor Sheave SetPt	-	1 TURN OPEN
Fan Sheave Size	-	AK69
Fan Sheave Bore	-	1
Belt CL Distance	-	19"
Num of Belts	-	1
Belt Size	-	A54
Belt Alignment	-	VERIFIED

Test Data		
	Design	**Actual**
SF CFM	2625	2873
SF RPM	987	834
RA CFM	2137	2382
OA CFM	488	491
RL Voltage	-	209/208/207
RL Amperage	-	7.2/7.2/7.3
SF Rotation	-	CCW
RA Damper Position	-	75%
Min OA Damper Position	-	25%
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	SP4

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.63"
Fan Suction SP	-	-0.75"
Fan Discharge SP	-	0.56"
Total ESP	1.2"	-

General		
	Design	**Actual**

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Notes:

National TAB

Project:01-02-23 WALGREENS #3840 - BURIEN, WA

AHU/RTU

Comfort. Under control.

Diffuser Supply (GRD)

RTU4/SALES

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
SGRD1	SALES			350	1	502	382	382	109.1
SGRD2	SALES			350	1	521	389	389	111.1
SGRD3	SALES			350	1	289	391	391	111.7
SGRD4	SALES			350	1	359	389	389	111.1
SGRD5	SALES			350	1	421	381	381	108.9
SGRD6	SALES			350	1	391	396	396	113.1
SGRD7	SALES			263	1	192	284	284	108.0
SGRD8	SALES			131	1	122	137	133	101.5
SGRD9	SALES			131	1	152	128	128	97.7

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National TAB

Project: 01-02-23 WALGREENS #3840 - BURIEN, WA

System/Unit: AHU/RTU

Comfort. Under control.

Asset: RTU5 AREA:PHARMACY

Unit Data		
	Design	**Actual**
MFG	YORK	YORK
Serial Num	-	N2E2506745
Model Num	ZJ037N08D2B5BCB2R3	ZJ037N08D2B5BCB2R3
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	29X20
Num Final Filter 1	-	2
Final Filter Size 1	-	16X40X2

Test Data		
	Design	**Actual**
SF CFM	1050	989
SF RPM	960	521
RA CFM	1050	989
OA CFM	0	0
RL Voltage	-	208/209/207
RL Amperage	-	3.12/3.14/3.2
SF Rotation	-	CCW
RA Damper Position	-	100%
Min OA Damper Position	-	0%
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	SP4

Motor Data		
	Design	**Actual**
Motor MFG	-	CENTURY
Frame	-	56H
Horsepower	1.50	1.5
Motor Rpm	-	1725
Phase	3	3
Rated Voltage	230	230/460
Rated Amperage	-	5.0/2.5

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.14"
Fan Suction SP	-	-0.16"
Fan Discharge SP	-	0.19"
Total ESP	1.2"	0.33"
Fan Total SP	-	0.35"

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	1VL44
Motor Bore Size	-	7/8
Motor Sheave SetPt	-	3 TURNS OPEN
Fan Sheave Size	-	AK69
Fan Sheave Bore	-	1"
Belt CL Distance	-	16"
Num of Belts	-	1
Belt Size	-	A47
Belt Alignment	-	VERIFIED

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

Completed By: Zack Eismin

Notes: AIRFLOW INITIALLY APPROXIMATELY 1750 CFM. PULLEY CHANGE PERFORMED TO REDUCE AIRFLOW TO DESIGN.

Comfort. Under control.

Diffuser Supply (GRD)

RTU5/PHARMACY

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
SGRD1	PHARMACY	NA	NA		1				
SGRD2	PHARMACY	NA	NA		1				
SGRD3	PHARMACY	NA	NA		1				
SGRD4	PHARMACY	NA	NA		1				

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National TAB

Project: 01-02-23 WALGREENS #3840 - BURIEN, WA

System/Unit: AHU/RTU

Comfort. Under control.

Asset: RTU6 AREA:STORAGE

Unit Data		
	Design	**Actual**
MFG	YORK	YORK
Serial Num	-	N2E2506744
Model Num	ZJ037N08D2B5BCB2R3	ZJ037N08D2B5BCB2R3
Type	RTU	RTU
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	20X29
Num Final Filter 1	-	2
Final Filter Size 1	-	16X50X2

Test Data		
	Design	**Actual**
SF CFM	1050	1047
SF RPM	960	542
RA CFM	950	940
OA CFM	100	107
RL Voltage	-	208/208/209
RL Amperage	-	3.25/3.24/3.14
SF Rotation	-	CCW
RA Damper Position	-	90%
Min OA Damper Position	-	10%
Min OA Damper Type	-	MOTORIZED
OA Enthalpy Setpt	-	SP4

Motor Data		
	Design	**Actual**
Motor MFG	-	CENTURY
Frame	-	56H
Horsepower	1.50	1.50
Motor Rpm	-	1725
Phase	3	3
Rated Voltage	230	230/460
Rated Amperage	-	5.0/2.5

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.15"
Fan Suction SP	-	-0.17"
Fan Discharge SP	-	0.10
Total ESP	1.2"	0.25"
Fan Total SP	-	0.27"

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	1VL44
Motor Bore Size	-	7/8
Motor Sheave SetPt	-	5 TURNS OPEN
Fan Sheave Size	-	AK104
Fan Sheave Bore	-	1"
Belt CL Distance	-	16"
Num of Belts	-	1
Belt Size	-	A47
Belt Alignment	-	VERIFIED

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

Completed By: Zack Eismin

Notes: AIRFLOW INITIALLY APPROXIMATELY 1700 CFM. PULLEY CHANGE PERFORMED TO REDUCE AIRFLOW TO DESIGN.

National TAB

Project: 01-02-23 WALGREENS #3840 - BURIEN, WA

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: EF1 AREA:EMPLOYEE ROOM

Unit Data		
	Design	**Actual**
MFG	PENN	PENN
Model Num	ZEPHYR-Z85TDA	ZEPHYR-Z85TDA
Serial Num	-	NL
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	NL
Frame	-	NL
Horsepower	0.008	NL
Motor Rpm	-	NL
Phase	1	NL
Voltage (rated)	115	NL
Amperage (rated)	-	NL
Service Factor	-	NL

Test Data		
	Design	**Actual**
CFM	300	0
System SetPt	-	ON
Total ESP	0.33"	0

Completed By: Zack Eismin

Notes:

National TAB

Project: 01-02-23 WALGREENS #3840 - BURIEN, WA

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: EF2 AREA:MENS RESTROOM

Unit Data		
	Design	**Actual**
MFG	PENN	PENN
Model Num	ZEPHYR-Z85TDA	ZEPHYR-Z85TDA
Serial Num	-	NA
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Test Data		
	Design	**Actual**
CFM	200	116
Fan RPM	-	NA
Total ESP	0.25"	NA

Motor Data		
	Design	**Actual**
Motor MFG	-	NL
Frame	-	NL
Horsepower	0.08	NL
Motor Rpm	-	NL
Phase	1	NL
Voltage (rated)	115	NL
Amperage (rated)	-	NL
Service Factor	-	NL

Completed By: Zack Eismin

Notes:

National TAB

Project: 01-02-23 WALGREENS #3840 - BURIEN, WA

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: EF3 AREA:WOMENS RR

Unit Data		
	Design	**Actual**
MFG	PENN	PENN
Model Num	ZEPHYR-Z85TDA	ZEPHYR-Z85TDA
Serial Num	-	NL
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Test Data		
	Design	**Actual**
CFM	200	126
Fan RPM	-	NA
Total ESP	0.25"	NA

Motor Data		
	Design	**Actual**
Motor MFG	-	NL
Frame	-	NL
Horsepower	0.08	NL
Motor Rpm	-	NL
Phase	1	NL
Voltage (rated)	115	NL
Amperage (rated)	-	NL
Service Factor	-	NL

Completed By: Zack Eismin

Notes:

National TAB

Project: 01-02-23 WALGREENS #3840 - BURIEN, WA

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: EF4 AREA:PHOTO

Unit Data		
	Design	**Actual**
MFG	PENN	PENN
Model Num	ZEPHYR-Z12STDA	ZEPHYR-Z12STDA
Serial Num	-	NL
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Test Data		
	Design	**Actual**
CFM	750	0
System SetPt	-	ON
Total ESP	0.25"	0

Motor Data		
	Design	**Actual**
Motor MFG	-	MAGNETEK
Frame	-	NL
Horsepower	0.12	NL
Motor Rpm	-	1550
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	7.9
Service Factor	-	NL

Completed By: Zack Eismin

Notes:

National TAB

Project: 01-02-23 WALGREENS #3840 - BURIEN, WA

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: EF5 AREA:OFFICE

Unit Data		
	Design	**Actual**
MFG	PENN	PENN
Model Num	ZEPHYR-Z8HTDA	ZEPHYR-Z8HTDA
Serial Num	-	NA
Type	CEILING	CEILING
Configuration	VERTICAL	HORIZONTAL

Motor Data		
	Design	**Actual**
Horsepower	0.08	NA
Phase	1	NA
Voltage (rated)	115	NA

Test Data		
	Design	**Actual**
CFM	300	153
System SetPt	-	ON
Total ESP	0.33"	NA

Completed By: Zack Eismin

Notes:

National TAB

Project: 01-02-23 WALGREENS #3840 - BURIEN, WA

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: EF6 AREA:MEZZANINE

Unit Data		
	Design	**Actual**
MFG	PENN	PENN
Model Num	ZEPHYR-Z10H	ZEPHYR-Z10H
Serial Num	-	-
Type	CEILING	-
Configuration	VERTICAL	-

Test Data		
	Design	**Actual**
CFM	500	-

Motor Data		
	Design	**Actual**
Horsepower	0.29	-
Phase	1	-
Voltage (rated)	115	-

Completed By: Brianna Biggs

Notes:

National TAB

Project: 01-02-23 WALGREENS #3840 - BURIEN, WA

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: EF7 AREA:MEZZANINE

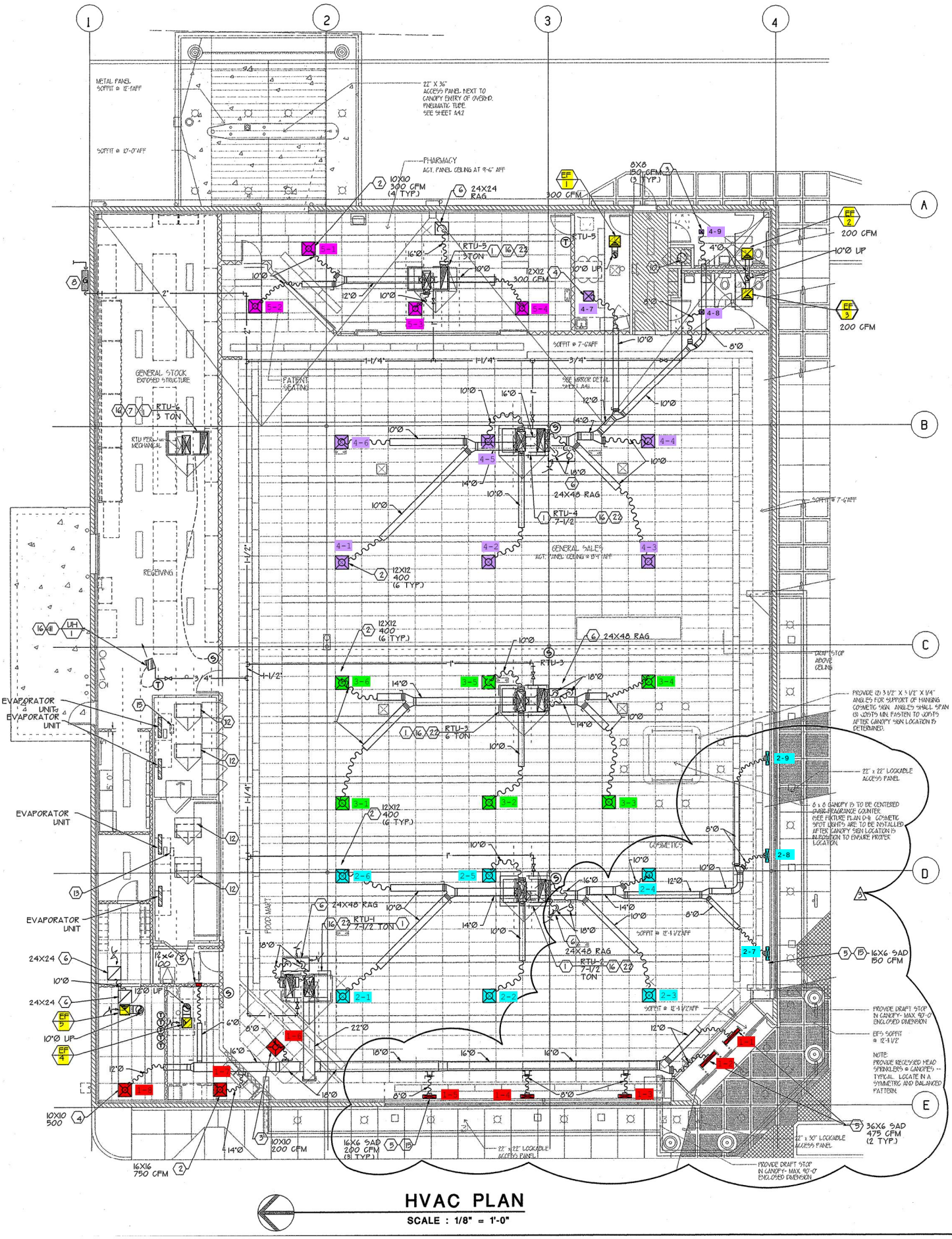
Unit Data		
	Design	**Actual**
MFG	PENN	PENN
Model Num	ZEPHYR-Z10H	ZEPHYR-Z10H
Serial Num	-	-
Type	CEILING	-
Configuration	VERTICAL	-

Test Data		
	Design	**Actual**
CFM	500	-

Motor Data		
	Design	**Actual**
Horsepower	0.29	-
Phase	1	-
Voltage (rated)	115	-

Completed By: Brianna Biggs

Notes:



HVAC PLAN

SCALE : 1/8" = 1'-0"