

Report By:

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



**Report: TAB Report**  
**Function: Test, Adjust, & Balance**  
**Date: 08/23/2023**

**PROJECT**

**08-07-23 WALGREENS #4721 - PUEBLO, CO**

2900 W NORTHERN AVE

PUEBLO, CO 81005

Client

Walgreens  
200 WILMOT RD  
DEERFIELD, IL 60015

# National TAB

Project: 08-07-23 WALGREENS #4721 - PUEBLO, CO

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## 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.

## Issue List

- Gridpoint temperature setpoints
- RTU OA Damper minimum position



**08-07-23 WALGREENS #4721 - PUEBLO, CO**

**Project Issue Information**

**Issue Name :** Gridpoint temperature setpoints  
**Description :** Temperature setpoints do not match the chart. Notified Gridpoint but they would not change settings without authorization from Walgreens.  
**Created By :** National TAB                      **Assigned To :** National TAB - Will Turnbough  
**Status :** Open  
**Priority :**    **Asset Tag :**  
**Originated Date :** 09/06/2023 - Will Turnbough - National TAB



**08-07-23 WALGREENS #4721 - PUEBLO, CO**

**Project Issue Information**

**Issue Name :** RTU OA Damper minimum position  
**Description :** The outside air dampers for the RTU's could not be set lower than 20%. When set below 20%, the dampers fully shut. OA for RTU-1 and 2 above design as a result. The other RTU dampers were set manually to achieve design flow. Recommend servicing.

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

**Status :** Open

**Priority :** High                                      **Asset Tag :**

**Originated Date :** 09/06/2023 - Will Turnbough - 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	SALES	2975	2868	2422	2148	553	720	18.6%	25.1%						
RTU-2	SALES/OFFICE	2975	2927	2422	2242	553	685	18.6%	23.4%						
RTU-3	SALES	1750	1597	1650	1487	100	110	5.7%	6.9%						
RTU-4	SALES/BREAK	1750	1582	1650	1476	100	106	5.7%	6.7%						
RTU-5	PHARMACY	1400	1482	1400	1482	0	0	0.0%	0.0%						
RTU-6	RECEIVING	1400	1526	1300	1425	100	101	7.1%	6.6%						
EF-1	OFFICE													300	213
EF-2	EMPLOYEE RR													300	311
EF-3	MENS RR													250	242
EF-4	WOMENS RR													250	255
EF-5	PHOTO														
<b>TOTALS</b>		12250	11982	10844	10260	1406	1722			0	0	0	0	1100	1021

#### NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	1406	1722
TOTAL EXHAUST	1100	1021
<b>NET AIRFLOW</b>	<b>306</b>	<b>701</b>

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H2O)
FRONT	0.0138
SIDE	0.0156
REAR	0.0141
<b>AVERAGE</b>	<b>0.0145</b>

#### 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:

UNABLE TO LOWER OA FROM RTU 1 & 2 TO DESIGN. ANY CHANGE BELOW 20% DAMPERS FULLY CLOSE. SET AT 20% WHEN READINGS WERE TAKEN.

## **CheckList List**

- TECH - 01 RTU INSTALLATION CHECKLIST
- TECH - 02 EXHAUST FANS INSPECTIONS
- TECH - 03 START-UP CONTROLS PROGRAMMING
- TECH - 04 EMS/SENSOR VALIDATION
- TECH - 05 TAB CHECKLIST
- TECH - 06 FUNCTIONAL TESTS
- TECH - 07 TEMPERATURE SETPOINTS



## 08-07-23 WALGREENS #4721 - PUEBLO, CO

### CheckList Information

**Name :** TECH - 01 RTU INSTALLATION CHECKLIST **Status :** Completed  
**Assigned Organization :** National TAB **Asset :**  
**Requesting Organization :** National TAB  
**Created Date :** 08/03/2023 - Brianna Biggs - National TAB  
**Completed Date :** 08/11/2023 - Jordan Best - National TAB

### CheckList Item Details

#### General / Exterior Inspections

Verify all required equipment has been replaced per TA and BOM. Pass

**Comment:**

All units are installed in the proper locations Pass

**Comment:**

Units are labeled correctly Pass

**Comment:**

Asset tag installed Pass

**Comment:**

Roof is clear of debris. Pass

**Comment:**

Maintenance access for all unit access panels is acceptable and panels open freely. Pass

**Comment:**

Cabinet and general installation is complete.

Pass

**Comment:**

Unit is secure to curb and level horizontally and vertically.

Pass

**Comment:**

Access doors close tightly with no leaks

Pass

**Comment:**

Condensate and gas piping is properly supported.

Pass

**Comment:**

Costguard is installed per scope of work and piping unions are cemented.

Pass

**Comment:**

Additional Comments

**Comment:**

#### **Interior Inspections**

Fan rotation is correct

Pass

**Comment:**

Pulleys are correctly aligned and both motor and fan sheave pins are tightened in place.

Pass

**Comment:**

Return air and outside air dampers close tightly with no gaps

Pass

**Comment:**

Cabinet and coils are not damaged and in like new condition.

Pass

**Comment:**

Inside of unit is clean and clear of debris.

Pass

**Comment:**

Validate condensate is piped to splash block, draining, or roof drain per code requirements

Pass

**Comment:**

Verify filters are installed, clean and of proper size. Verify there is no air by-pass around filters.

Pass

**Comment:**

Curb is sealed with no air leakage.

Pass

**Comment:**

Additional Comments:

**Comment:**

**Fire/Smoke Alarm Systems**

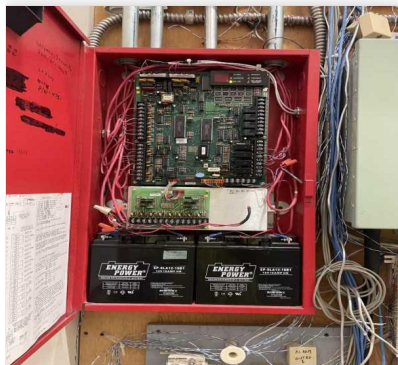
In duct smoke detectors are installed

Pass

**Comment:**

Fire alarm panel status (visual inspection where possible)

**Comment:**



**IMG\_1306**  
**08/11/2023**

Additional Comments:

**Comment:**

---

**Electrical**

---

Electrical wiring is complete with no visible damage

Pass

---

**Comment:**

---

Electrical connections are tight with sealtight around any unit penetrations.

Pass

---

**Comment:**

---

Disconnect switch is installed in accessible location near or on unit.

Pass

---

**Comment:**

---

Verify overcurrent protection is HACR type, installed and sized correctly and labeled in panel.

Pass

---

**Comment:**

---

Maintenance electrical outlet is installed and functional.

Pass

---

**Comment:**

---

Main distribution panel is labeled correctly.

Pass

---

**Comment:**

---

Unit ground wire is secured.

Pass

---

**Comment:**

---

Additional Comments:

---

**Comment:**

---



## 08-07-23 WALGREENS #4721 - PUEBLO, CO

### CheckList Information

**Name :** TECH - 02 EXHAUST FANS INSPECTIONS      **Status :** Not Completed  
**Assigned Organization :** National TAB      **Asset :**  
**Requesting Organization :** National TAB  
**Created Date :** 08/03/2023 - Brianna Biggs - National TAB

### CheckList Item Details

Fan rotation is correct Pass

**Comment:**

Pulleys are aligned and belts are tensioned properly

**Comment:**

NA

Speed controller installed and functional (direct drive)

**Comment:**

NA

Fan is secured to the curb

**Comment:**

Back draft damper is installed and functional Pass

**Comment:**

No exterior damage to the fan Pass

**Comment:**

No unusual noise or vibration Pass

**Comment:**

---

Controls are functional

N/A

---

**Comment:**

---

Additional Comments:

---

**Comment:**

Fans are not equipped with speed controller so they are either on or off. EF-2 was cross ducted into a supply duct. Notified GC,

---



## 08-07-23 WALGREENS #4721 - PUEBLO, CO

### CheckList Information

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

**Assigned Organization :** National TAB **Asset :**

**Requesting Organization :** National TAB

**Created Date :** 08/03/2023 - Brianna Biggs - National TAB

**Completed Date :** 08/10/2023 - Jordan Best - National TAB

### CheckList Item Details

**Programming: SE 3.3, 3.4, 4.0**

Controller-Network-Address: RTU number + 3 Pass

**Comment:**

Controller-Network-FCBusMode = Wired Field Bus Pass

**Comment:**

Controller-Network-BaudRate = Auto Pass

**Comment:**

Controller-Network-Device ID = RTU number + 3 Pass

**Comment:**

Details-Occ-OffDurUnocc = No Pass

**Comment:**

Details-Clg-Setup-Clg-En = Yes Pass

**Comment:**

Details-Clg-Setup-ClgAdapTunEn = Yes

Pass

**Comment:**

Details-Htg-Setup-Htg-En = Yes

Pass

**Comment:**

Details-Htg-Setup-#HtgStgs = 2 Stages

Pass

**Comment:**

Details-Htg-Setup-HtgAdapTunEn = Yes

Pass

**Comment:**

Details-Htg-Setup-#GasVlvs = 1 (Set to 0 for Hp and Elect Heat)

Pass

**Comment:**

Details-Fan-Setup-Fan Ctl-Type = No VFD select "Single Speed", W/VFD select "Fixed Variable"

Pass

**Comment:**

Details-Fan-Setup-FanOnOcc = Yes

Pass

**Comment:**

Details-Fan-Setup-FanOnDlyHeat = 30s (Set to 0 for HP or Electric Heat)

Pass

**Comment:**

Details-Fan-Setup-FanOnly-%Cmd = 50%

Pass

**Comment:**

Details-Fan-Setup-1ClgStg-%Cmd = 70%

Pass

**Comment:**

Details-Fan-Setup-2Clgstg-%Cmd = 100% (2stage Unit) or 80% (3 and 4 stage)

Pass

**Comment:**

---

Details-Fan-Setup-3ClStg-%Cmd = 100% (3 stage unit) or 90% (4 stage)

Pass

---

**Comment:**

---

Details-Fan-Setup-4ClStg-%Cmd = 100% (4 Stage unit)

Pass

---

**Comment:**

---

Details-Fan-Setup-1HtgStg-%Cmd = 100%

Pass

---

**Comment:**

---

Details-Fan-Setup-2HtgStg-%Cmd = 100%

Pass

---

**Comment:**

---

Details-Econ-Setup-Econ-En = Yes

Pass

---

**Comment:**

---

Details-Econ-Setup-Econ-MinPos = Set to minimum outside air requirements.

Pass

---

**Comment:**

---

Details-Econ-Setup-LowSpdFan-MinPos = Set minimum 1% above EconMinPos

Pass

---

**Comment:**

---

Details-Econ-Setup-FreeClg-Sel = Single Enthalpy

Pass

---

**Comment:**

---

Details-Econ-Setup-EconOAEnth-Sp 4= 24 Btu/lb

Pass

---

**Comment:**

---

Details-Econ-Setup-Dvent-Mode = Enable

Pass

---

**Comment:**

---

Details-Econ-Setup-DventMaxEconPos = 50%

Pass

---

**Comment:**

Details-Econ-Setup-DventIAP-Sp = 1000

Pass

**Comment:**

Details-Econ-Setup-EconFltDetectEn = Enable

Pass

**Comment:**

Additional Comments:

**Comment:**

**Non ZR Units only:**

Details-HGR-Setup-HGR-En = No

Pass

**Comment:**

Details-HGR-Setup-HGRAIt-En = No

Pass

**Comment:**

Details - HGR-Setup-HGRUnocc-En = No

Pass

**Comment:**

Details-HGR-Setup-Mode = No

Pass

**Comment:**

Additional Comments:

**Comment:**

**ZR Units - Reheat Units only:**

Details-HGR-Setup-HGR-En = Yes

Pass

**Comment:**

Details-HGR-Setup-HGRAIt-En = Yes

Pass

**Comment:**

---

Details - HGR-Setup-HGRUnocc-En = Yes

Pass

---

**Comment:**

---

Details-HGR-Setup-Mode = No

Pass

---

**Comment:**

---

Additional Comments:

---

**Comment:**

---



### 08-07-23 WALGREENS #4721 - PUEBLO, CO

#### CheckList Information

**Name :** TECH - 04 EMS/SENSOR VALIDATION **Status :** Completed  
**Assigned Organization :** National TAB **Asset :**  
**Requesting Organization :** National TAB  
**Created Date :** 08/03/2023 - Brianna Biggs - National TAB  
**Completed Date :** 08/10/2023 - Jordan Best - National TAB

#### CheckList Item Details

RTU supply air temp sensor location located per start-up binder. N/A

**Comment:**

NO START UP BINDER

RTU return air temp sensor location located per start-up binder. N/A

**Comment:**

NO START UP BINDER

RTU return air smoke detector (when applicable) is located per start-up binder. N/A

**Comment:**

NO START UP BINDER

Space temperature sensor has been replaced and location meets requirements. Pass

**Comment:**

Space humidity sensor has been replaced and location meets requirements. N/A

**Comment:**

Unit is being controlled by a space temperature sensor or thermostat Pass

**Comment:**

EMS has been connected and validated with TOC or Gridpoint. Screen shot is available.

Pass

**Comment:**

No splicing of EMS/Sensor/Thermostat wiring is visible

Pass

**Comment:**

(If Applicable) 2 Stage Thermostat to SE Board Control Wiring meets detail in start-up binder.

**Comment:**

NA

(If Applicable) 2 Stage Thermostat to 4 Stage Unit meets detail in start-up binder.

**Comment:**

NA

(If Applicable) 4 Stage Thermostat to 4 Stage Unit meets detail in start-up binder.

**Comment:**

NA

(If Applicable) 3 Stage Thermostat wiring meets detail in start-up binder.

**Comment:**

NA

(If Applicable) 3 Stage Thermostat with Humidity sensor wiring meets detail in start-up binder.

**Comment:**

NA

(If Applicable) EH Thermostat with SCR control wiring meets detail in start-up binder.

**Comment:**

NA

Temperature setpoints are set for correction region and space (see ASHRAE / temperature setpoint chart in procedure)

Fail

**Comment:**

CALLED GRID POINT TO VERIFY SET-POINTS BUT THEY WOULD NOT CHANGE THEM TO MATCH WHAT IS ON MY CHART. ALL SET POINTS WERE WITHIN 1 TO 2 DEGRESS OF WHAT THE CHART CALLS FOR

Additional Comments:

Comment:



## 08-07-23 WALGREENS #4721 - PUEBLO, CO

### CheckList Information

**Name :** TECH - 05 TAB CHECKLIST **Status :** Not Completed  
**Assigned Organization :** National TAB **Asset :**  
**Requesting Organization :** National TAB  
**Created Date :** 08/03/2023 - Brianna Biggs - National TAB

### CheckList Item Details

Outside air damper set to minimum air flow requirement and damper position marked. Pass

**Comment:**

Total Supply, return, and outside air volumes meet design tolerances (+/-10%) Pass

**Comment:**

Enclosed area diffusers (Pharmacies, manager office, employee room, restrooms, electrical rooms) balanced within +/-10%? Pass

**Comment:**

Open area diffusers (Sales floor and stock room) balanced within +/-25% of design? Pass

**Comment:**

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

**Comment:**

Outside air and return air dampers modulate freely. Pass

**Comment:**

Start-up report from the installing contractor is reviewed and all information if filled out. All required measurements are within typical ranges. N/A

**Comment:**

Did not receive startup report from office nor GC.

(If Applicable) VFD is set-up and operational. (N/A = not applicable)

**Comment:**

YES

Verify amp draw of motor is within unit specification, not operating in overamped condition. Pass

**Comment:**

Sales floor temperature and humidity measurement

**Comment:**

01/16/2024: 68.8/13.1%

Pharmacy temperature and humidity measurement

**Comment:**

01/16/2024: 70.6/13.8%

Stock Room temperature and humidity measurement

**Comment:**

01/16/2024: 68.9/13.6%

Outdoor air temperature and humidity measurement

**Comment:**

01/16/2024: 31.6/19.4%

Additional Comments:

**Comment:**



08-07-23 WALGREENS #4721 - PUEBLO, CO

CheckList Information

**Name :** TECH - 06 FUNCTIONAL TESTS      **Status :** Not Completed

**Assigned Organization :** National TAB      **Asset :**

**Requesting Organization :** National TAB

**Created Date :** 08/03/2023 - Brianna Biggs - National TAB

CheckList Item Details

**Cooling Functional Test**

Overwrite the thermostat or sensor to put the unit into cooling mode.	Pass
---	------

**Comment:**

Compressors enable.	Pass
---------------------	------

**Comment:**

If fan has VFD, the fan increases speed.	Pass
--	------

**Comment:**

Document the discharge air temperature.	
---	--

**Comment:**

NA

After 10 minutes, Discharge air temperature is below 55 degrees.	Pass
--	------

**Comment:**

Cooling mode is operational	Pass
-----------------------------	------

**Comment:**

Additional Comments:

**Comment:**

---

**Heating Functional Test**

---

Overwrite the thermostat or sensor to put the unit into heating mode.

Pass

**Comment:**

---

Heat exchanger enables.

Pass

**Comment:**

---

If fan has VFD, the fan increases speed.

Pass

**Comment:**

---

Document the discharge air temperature.

**Comment:**

NR

---

After 10 minutes, Discharge air temperature is above 85 degrees.

Pass

**Comment:**

---

Heating mode is operational

Pass

**Comment:**

---

Additional Comments

**Comment:**

---

**Dehumidification Functional Test**

---

Overwrite the humidistat to put the unit into dehumidification mode.

Pass

**Comment:**

---

Compressors enable.

Pass

**Comment:**

---

Hot Gas Reheat Valve opens

Pass

**Comment:**

---

If fan has VFD, the fan increases speed.

Pass

---

**Comment:**

---

Document the discharge air temperature.

---

**Comment:**

NR

---

Dehumidification Mode is operational. (Pass/Fail/NA)

---

**Comment:**

---

Additional Comments:

---

**Comment:**

---

**Economizer Functional Test**

---

Overwrite the humidistat to put the unit into economizer mode.

Pass

---

**Comment:**

---

Economizer modulates from minimum position to 100% open. (Pass/Fail/NA)

---

**Comment:**

Fail - Unable to set minimum position on RTU's. Damper did open to 100%.

---

Additional Comments:

---

**Comment:**

---



### 08-07-23 WALGREENS #4721 - PUEBLO, CO

#### CheckList Information

**Name :** TECH - 07 TEMPERATURE SETPOINTS **Status :** Completed

**Assigned Organization :** National TAB **Asset :**

**Requesting Organization :** National TAB

**Created Date :** 08/03/2023 - Brianna Biggs - National TAB

**Completed Date :** 08/10/2023 - Jordan Best - National TAB

#### CheckList Item Details

Temperature setpoints must be set using provided charts are based on state and space that each RTU serves. Confirm with controls company that these are set correctly Fail

**Comment:**

REACHED OUT TO GRID POINT TO CONFIRM TEMP SET POINTS. WHEN I ASKED THEM TO MAKE CHANGES THEY TOLD ME I WAS NOT AUTHORIZED TO DO SO AND THE WALGREENS ENGINEERING/CONSTRUCTION TEAM WOULD HAVE TO INITIATE A TICKET TO DO SO. TEMP SET POINTS CLOSELY REFLECTED CHART, BUT SOME WERE 1 TO 2 DEGREES OFF.

# National TAB

Project: 08-07-23 WALGREENS #4721 - PUEBLO, CO

## System/Unit: AHU/RTU



Asset: RTU1

AREA:SALES

Unit Data			Test Data		
	Design	Actual		Design	Actual
MFG	YORK	YORK	SF CFM	2975	2868
Serial Num	-	N2K2935428	SF RPM	1089	984
Model Num	ZT102N18R4B5GCE2R1	ZT102N18R4B5GCE2R1	RA CFM	2422	2148
Type	RTU	RTU	OA CFM	553	720
Configuration	VERTICAL	VERTICAL	RL Voltage	-	494
Num OA Filters 1	-	1	RL Amperage	-	3.1
OA Filter Size 1	-	30" X 22"	SF Rotation	-	CW
Num Final Filter 1	-	4	RA Damper Position	-	80%
Final Filter Size 1	-	20" X 24" X 2"	Min OA Damper Position	-	20%
			Min OA Damper Type	-	ECON
			OA Enthalpy Setpt	-	NA

Motor Data		
	Design	Actual
Motor MFG	-	BALDOR
Frame	-	56HZ
Horsepower	3	3
Motor Rpm	-	1750
Phase	3	3
Rated Voltage	460	460
Rated Amperage	-	8.3

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.32"
Fan Suction SP	-	-0.72"
Fan Discharge SP	-	0.59"
Total ESP	1.2	1.63"
Fan Total SP	-	1.31"

Drive Data		
	Design	Actual
Motor Sheave Size	-	4.5"
Motor Bore Size	-	0.875"
Motor Sheave SetPt	-	4 TURNS OUT
Fan Sheave Size	-	7"
Fan Sheave Bore	-	1"
Belt CL Distance	-	19.5"
Num of Belts	-	1
Belt Size	-	A54
Belt Alignment	-	GOOD

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

Completed By: Jordan Best on 08/30/2023

Notes:

Unable to decrease OA Flow. Damper does not react to anything below 20% change on units controller. Anything below 20% it fully closes. OA remains the same.

Written By: Dylan Crisman on 01/16/2024

# National TAB

Project:08-07-23 WALGREENS #4721 - PUEBLO, CO

## AHU/RTU



### Diffuser Supply (GRD)

#### RTU1/SALES

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	CHECK OUT		12X6	265	1	193	286	286	107.9
SGRD2	CHECK OUT		12X12	475	1	521	410	410	86.3
SGRD3	COSMETICS		12X12	475	1	409	392	392	82.5
SGRD4	COSMETICS		12X12	475	1	382	421	421	88.6
SGRD5	CHECK OUTS		12X12	475	1	412	437	437	92.0
SGRD6	SALES		12X6	270	1	310	294	294	108.9
SGRD7	SALES		12X6	270	1	219	301	301	111.5
SGRD8	SALES		12X6	270	1	403	327	327	121.1
Total				2975		2849	2868	2868	96.4%

# National TAB

Project: 08-07-23 WALGREENS #4721 - PUEBLO, CO

## System/Unit: AHU/RTU



Asset: RTU2

AREA:SALES/ OFFICES

Unit Data			Test Data		
	Design	Actual		Design	Actual
MFG	YORK	YORK	SF CFM	2975	2927
Serial Num	-	N2F2609560	SF RPM	1055	897
Model Num	ZT102N18R4B5GCA2R1	ZT102N18R4B5GCA2R1	RA CFM	2422	2242
Type	RTU	RTU	OA CFM	553	685
Configuration	VERTICAL	VERTICAL	RL Voltage	-	495
Num OA Filters 1	-	1	RL Amperage	-	3.8
OA Filter Size 1	-	30" X 22"	SF Rotation	-	CW
Num Final Filter 1	-	4	RA Damper Position	-	80%
Final Filter Size 1	-	20" X 24" X 2"	Min OA Damper Position	-	20%
			Min OA Damper Type	-	ECON

Motor Data		
	Design	Actual
Motor MFG	-	BALDOR
Frame	-	56HZ
Horsepower	3	3
Motor Rpm	-	1750
Phase	3	3
Rated Voltage	460	460
Rated Amperage	-	8.3

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.53"
Fan Suction SP	-	-0.73"
Fan Discharge SP	-	0.45"
Total ESP	1.2"	1.71"
Fan Total SP	-	1.18"

Drive Data		
	Design	Actual
Motor Sheave Size	-	4.5"
Motor Bore Size	-	0.875"
Motor Sheave SetPt	-	5 TURNS OUT
Fan Sheave Size	-	7"
Fan Sheave Bore	-	1"
Belt CL Distance	-	19.5"
Num of Belts	-	1
Belt Size	-	A54
Belt Alignment	-	GOOD

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

Completed By: Jordan Best on 08/10/2023

Notes:

Unable to decrease OA Flow. Damper does not react to anything below 20% change on units controller. Anything below 20% it fully closes. OA remains the same.

Written By: Dylan Crisman on 01/16/2024

# National TAB

Project:08-07-23 WALGREENS #4721 - PUEBLO, CO

## AHU/RTU



### Diffuser Supply (GRD)

#### RTU2/SALES/ OFFICES

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	SALES		12X6	270	1	372	209	209	77.4
SGRD2	SALES		12X6	270	1	283	215	215	79.6
SGRD3	PHOTO		18X18	350	1	291	287	287	82.0
SGRD4	PASSAGE 2		9X9	335	1	395	402	402	120.0
SGRD5	OFFICE		12"	350	1	503	372	372	106.3
SGRD6	SALES		15X15	350	1	621	299	299	85.4
SGRD7	SALES		12X12	350	1	293	381	381	108.9
SGRD8	SALES		12X12	350	1	403	372	372	106.3
SGRD9	SALES		12X12	350	1	256	392	392	112.0
Total				2975		3417	2929	2929	98.45%

# National TAB

Project: 08-07-23 WALGREENS #4721 - PUEBLO, CO

## System/Unit: AHU/RTU



Asset: RTU3

AREA:SALES

Unit Data			Test Data		
	Design	Actual		Design	Actual
MFG	YORK	YORK	SF CFM	1750	1695
Serial Num	-	N2K2935596	SF RPM	1051	722
Model Num	ZJ061N12D4B5GCB2R3	ZJ061N12D4B5GCB2R3	RA CFM	1650	1585
Type	RTU	RTU	OA CFM	100	110
Configuration	HORIZONTAL	HORIZONTAL	RL Voltage	-	497
Num OA Filters 1	-	1	RL Amperage	-	3.3
OA Filter Size 1	-	30" X 22"	SF Rotation	-	CW
Num Final Filter 1	-	4	RA Damper Position	-	85%
Final Filter Size 1	-	20" X 24" X 2"	Min OA Damper Position	-	15%
			Min OA Damper Type	-	ECON

Motor Data		
	Design	Actual
Motor MFG	-	MARATHON
Frame	-	56HZ
Horsepower	2	2
Motor Rpm	-	1725
Phase	3	3
Rated Voltage	460	460
Rated Amperage	-	6.6

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.24"
Fan Suction SP	-	-0.12"
Fan Discharge SP	-	0.34"
Total ESP	1.3"	0.58"
Fan Total SP	-	0.46"

Drive Data		
	Design	Actual
Motor Sheave Size	-	3.15"
Motor Bore Size	-	.875"
Motor Sheave SetPt	-	2 TURNS OUT
Fan Sheave Size	-	7"
Fan Sheave Bore	-	.0875"
Belt CL Distance	-	17.5"
Num of Belts	-	1
Belt Size	-	A48
Belt Alignment	-	GOOD

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

Completed By: Dylan Crisman on 01/16/2024

Notes:  
CHANGED PULLEY TO REDUCE AIRFLOW TO DESIGN.

Written By: Will Turnbough on 09/06/2023

# National TAB

Project:08-07-23 WALGREENS #4721 - PUEBLO, CO

## AHU/RTU



### Diffuser Supply (GRD)

#### RTU3/SALES

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	SALES		12X12	440	1	573	490	364	82.7
SGRD2	SALES		12X12	435	1	693	528	466	107.1
SGRD3	SALES		12X12	440	1	572	309	442	100.5
SGRD4	SALES		12X12	435	1	705	273	423	97.2
Total				1750		2543	1600	1695	96.86%

Completed By: Jordan Best on 08/10/2023

# National TAB

Project: 08-07-23 WALGREENS #4721 - PUEBLO, CO

## System/Unit: AHU/RTU



Asset: RTU4

AREA:SALES/BREAK ROOM

Unit Data			Test Data		
	Design	Actual		Design	Actual
MFG	YORK	YORK	\$F CFM	1750	1589
Serial Num	-	N2K2935595	\$F RPM	1051	800
Model Num	ZJ061N12D4B5GCB2R3	ZJ061N12D4B5GCB2R3	RA CFM	1650	1483
Type	RTU	RTU	OA CFM	100	106
Configuration	VERTICAL	VERTICAL	RL Voltage	-	497
Num OA Filters 1	-	1	RL Amperage	-	3.3
OA Filter Size 1	-	30" X 22"	\$F Rotation	-	CCW
Num Final Filter 1	-	4	RA Damper Position	-	85%
Final Filter Size 1	-	20" X 24" X 2"	Min OA Damper Position	-	15%
			Min OA Damper Type	-	ECON

Motor Data		
	Design	Actual
Motor MFG	-	MARATHON
Frame	-	56HZ
Horsepower	2	2
Motor Rpm	-	1725
Phase	3	3
Rated Voltage	460	460
Rated Amperage	-	6.6

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.16"
Fan Suction SP	-	-0.32"
Fan Discharge SP	-	0.35"
Total ESP	1.3"	0.51"
Fan Total SP	-	0.67"

Drive Data		
	Design	Actual
Motor Sheave Size	-	3.15"
Motor Bore Size	-	.875"
Motor Sheave SetPt	-	.5 TURNS OUT
Fan Sheave Size	-	7"
Fan Sheave Bore	-	.0875"
Belt CL Distance	-	18.5"
Num of Belts	-	1
Belt Size	-	A48
Belt Alignment	-	GOOD

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

Completed By: Dylan Crisman on 01/16/2024

Notes:  
CHANGED PULLEY TO REDUCE AIRFLOW TO DESIGN. MOTOR SHEAVE MAXIMIZED. UNABLE TO INCREASE FURTHER.

Written By: Will Turnbough on 01/24/2024

# National TAB

Project:08-07-23 WALGREENS #4721 - PUEBLO, CO

## AHU/RTU



### Diffuser Supply (GRD)

#### RTU4/SALES/BREAK ROOM

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	SALES		12x12	395	1	621	309	311	78.7
SGRD2	SALES		12x12	395	1	582	341	339	85.8
SGRD3	EMPLOYEE ROOM		12x12	170	1	215	157	161	94.7
SGRD4	SALES		12x12	395	1	612	373	374	94.7
SGRD5	SALES		12x12	395	1	388	402	404	102.3
Total				1750		2418	1582	1589	90.8%

Completed By: Jordan Best on 08/10/2023

# National TAB

Project: 08-07-23 WALGREENS #4721 - PUEBLO, CO

## System/Unit: AHU/RTU



Asset: RTU5

AREA:PHARMACY

Unit Data			Test Data		
	Design	Actual		Design	Actual
MFG	YORK	YORK	SF CFM	1400	1482
Serial Num	-	N2H2934799	SF RPM	995	753
Model Num	ZJ049N12D4B5BCB2R2	ZJ049N12D4B5BCB2R2	RA CFM	1400	1482
Type	RTU	RTU	OA CFM	0	0
Configuration	VERTICAL	VERTICAL	RL Voltage	-	500
Num OA Filters 1	-	1	RL Amperage	-	2.16
OA Filter Size 1	-	30" X 22"	SF Rotation	-	CW
Num Final Filter 1	-	4	RA Damper Position	-	100%
Final Filter Size 1	-	20" X 24" X 2"	Min OA Damper Position	-	0%
			Min OA Damper Type	-	ECON

Motor Data		
	Design	Actual
Motor MFG	-	CENTURY
Frame	-	56HZ
Horsepower	1.50	1.5
Motor Rpm	-	1725
Phase	3	3
Rated Voltage	460	460
Rated Amperage	-	5

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.23"
Fan Suction SP	-	-0.33"
Fan Discharge SP	-	0.20"
Total ESP	1.2"	0.76"
Fan Total SP	-	0.53"

Drive Data		
	Design	Actual
Motor Sheave Size	-	4"
Motor Bore Size	-	.0875"
Motor Sheave SetPt	-	4 TURNS OUT
Fan Sheave Size	-	8.25
Fan Sheave Bore	-	1"
Belt CL Distance	-	17"
Num of Belts	-	1
Belt Size	-	A50
Belt Alignment	-	GOOD

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

Completed By: Jordan Best on 08/10/2023

# National TAB

Project:08-07-23 WALGREENS #4721 - PUEBLO, CO

## AHU/RTU



### Diffuser Supply (GRD)

#### RTU5/PHARMACY

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	PHARMACY		12X12	350	1	617	370	370	105.7
SGRD2	PHARMACY		12X12	350	1	573	372	372	106.3
SGRD3	PHARMACY		12x12	350	1	493	367	367	104.9
SGRD4	PHARMACY		12X12	350	1	494	373	373	106.6
Total				1400		2177	1482	1482	105.86%

Completed By: Jordan Best on 08/10/2023

# National TAB

Project: 08-07-23 WALGREENS #4721 - PUEBLO, CO

## System/Unit: AHU/RTU



Asset: RTU6

AREA:RECEIVING

Unit Data			Test Data		
	Design	Actual		Design	Actual
MFG	YORK	YORK	SF CFM	1400	1526
Serial Num	-	N2H2934789	SF RPM	995	1014
Model Num	ZJ049N12D4B5BCB2R2	ZJ049N12D4B5BCB2R2	RA CFM	1300	1417
Type	RTU	RTU	OA CFM	100	101
Configuration	VERTICAL	VERTICAL	RL Voltage	-	497
Num OA Filters 1	-	1	RL Amperage	-	2.13
OA Filter Size 1	-	30" X 22"	SF Rotation	-	CW
Num Final Filter 1	-	4	RA Damper Position	-	80%
Final Filter Size 1	-	20" X 24" X 2"	Min OA Damper Position	-	20%
			Min OA Damper Type	-	ECON

Motor Data		
	Design	Actual
Motor MFG	-	CENTURY
Frame	-	56HZ
Horsepower	1.50	1.5
Motor Rpm	-	1725
Phase	3	3
Rated Voltage	460	460
Rated Amperage	-	5

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.04"
Fan Suction SP	-	-0.12"
Fan Discharge SP	-	0.13"
Total ESP	1.2"	0.21"
Fan Total SP	-	0.25"

Drive Data		
	Design	Actual
Motor Sheave Size	-	3.875
Motor Bore Size	-	.875"
Motor Sheave SetPt	-	5 TURNS OUT
Fan Sheave Size	-	8.25"
Fan Sheave Bore	-	1"
Belt CL Distance	-	17.5"
Num of Belts	-	1
Belt Size	-	A50
Belt Alignment	-	GOOD

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

Completed By: Dylan Crisman on 01/16/2024

Notes:  
CHANGED PULLEY TO REDUCE AIRFLOW TO DESIGN.

Written By: Will Turnbough on 09/06/2023

# National TAB

Project: 08-07-23 WALGREENS #4721 - PUEBLO, CO

## System/Unit: FAN - Exhaust



Asset: EF1

AREA:OFFICE

Unit Data		
	Design	Actual
MFG	GREENHECK	GREENHECK
Model Num	SP-250	SP-250
Serial Num	-	NA
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	Actual
Motor MFG	-	NA
Frame	-	NA
Horsepower	121W	NA
Motor Rpm	-	NA
Phase	1	NA
Voltage (rated)	120	NA
Amperage (rated)	-	NA
Service Factor	-	NA

Test Data		
	Design	Actual
CFM	300	213
Fan RPM	890	NA
Fan Rotation	-	CW
Motor RPM	-	NA
System SetPt	-	NA
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	0.375"	NA
Fan Inlet SP	-	NA
Fan Discharge SP	-	NA

Completed By: Dylan Crisman on 01/16/2024

Notes:  
SPEED DIAL IS AT MAXIMUM.

Written By: Will Turnbough on 01/24/2024

# National TAB

Project: 08-07-23 WALGREENS #4721 - PUEBLO, CO

## System/Unit: FAN - Exhaust



Asset: EF2

AREA:EMPLOYEE ROOM

Unit Data		
	Design	Actual
MFG	GREENHECK	GREENHECK
Model Num	SP-250	SP-250
Serial Num	-	NA
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	Actual
Motor MFG	-	NA
Frame	-	NA
Horsepower	121W	NA
Motor Rpm	-	NA
Phase	1	NA
Voltage (rated)	120	NA
Amperage (rated)	-	NA
Service Factor	-	NA

Test Data		
	Design	Actual
CFM	300	311
Fan RPM	890	NA
Fan Rotation	-	CW
Motor RPM	-	NA
System SetPt	-	NA
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	0.375"	NA
Fan Inlet SP	-	NA
Fan Discharge SP	-	NA

Completed By: Dylan Crisman on 01/16/2024

# National TAB

Project: 08-07-23 WALGREENS #4721 - PUEBLO, CO

## System/Unit: FAN - Exhaust



Asset: EF3

AREA:MENS RR

Unit Data		
	Design	Actual
MFG	GREENHECK	GREENHECK
Model Num	SP-226	SP-226
Serial Num	-	NA
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	Actual
Motor MFG	-	NA
Frame	-	NA
Horsepower	87W	NA
Motor Rpm	-	NA
Phase	1	NA
Voltage (rated)	120	NA
Amperage (rated)	-	NA
Service Factor	-	NA

Test Data		
	Design	Actual
CFM	250	242
Fan RPM	1000	NA
Fan Rotation	-	CW
Motor RPM	-	NA
System SetPt	-	NA
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	0.25"	NA
Fan Inlet SP	-	NA
Fan Discharge SP	-	NA

Completed By: Jordan Best on 08/10/2023

# National TAB

Project: 08-07-23 WALGREENS #4721 - PUEBLO, CO

## System/Unit: FAN - Exhaust



Asset: EF4

AREA:WOMENS RR

Unit Data		
	Design	Actual
MFG	GREENHECK	GREENHECK
Model Num	SP-226	SP-226
Serial Num	-	NA
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	Actual
Motor MFG	-	NA
Frame	-	NA
Horsepower	81W	NA
Motor Rpm	-	NA
Phase	1	NA
Voltage (rated)	120	NA
Amperage (rated)	-	NA
Service Factor	-	NA

Test Data		
	Design	Actual
CFM	250	255
Fan RPM	1000	NA
Fan Rotation	-	CW
Motor RPM	-	NA
System SetPt	-	NA
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	0.25"	NA
Fan Inlet SP	-	NA
Fan Discharge SP	-	NA

Completed By: Jordan Best on 08/10/2023

# National TAB

Project: 08-07-23 WALGREENS #4721 - PUEBLO, CO

## System/Unit: FAN - Exhaust



Asset: EF5

AREA:PHOTO

Unit Data		
	Design	Actual
MFG	GREENHECK	GREENHECK
Model Num	CSP-260	CSP-260
Serial Num	-	NA
Type	UTILITY	NA
Configuration	VERTICAL	NA

Motor Data		
	Design	Actual
Motor MFG	-	NA
Frame	-	NA
Horsepower	385W	NA
Motor Rpm	-	NA
Phase	1	NA
Voltage (rated)	120	NA
Amperage (rated)	-	NA
Service Factor	-	NA

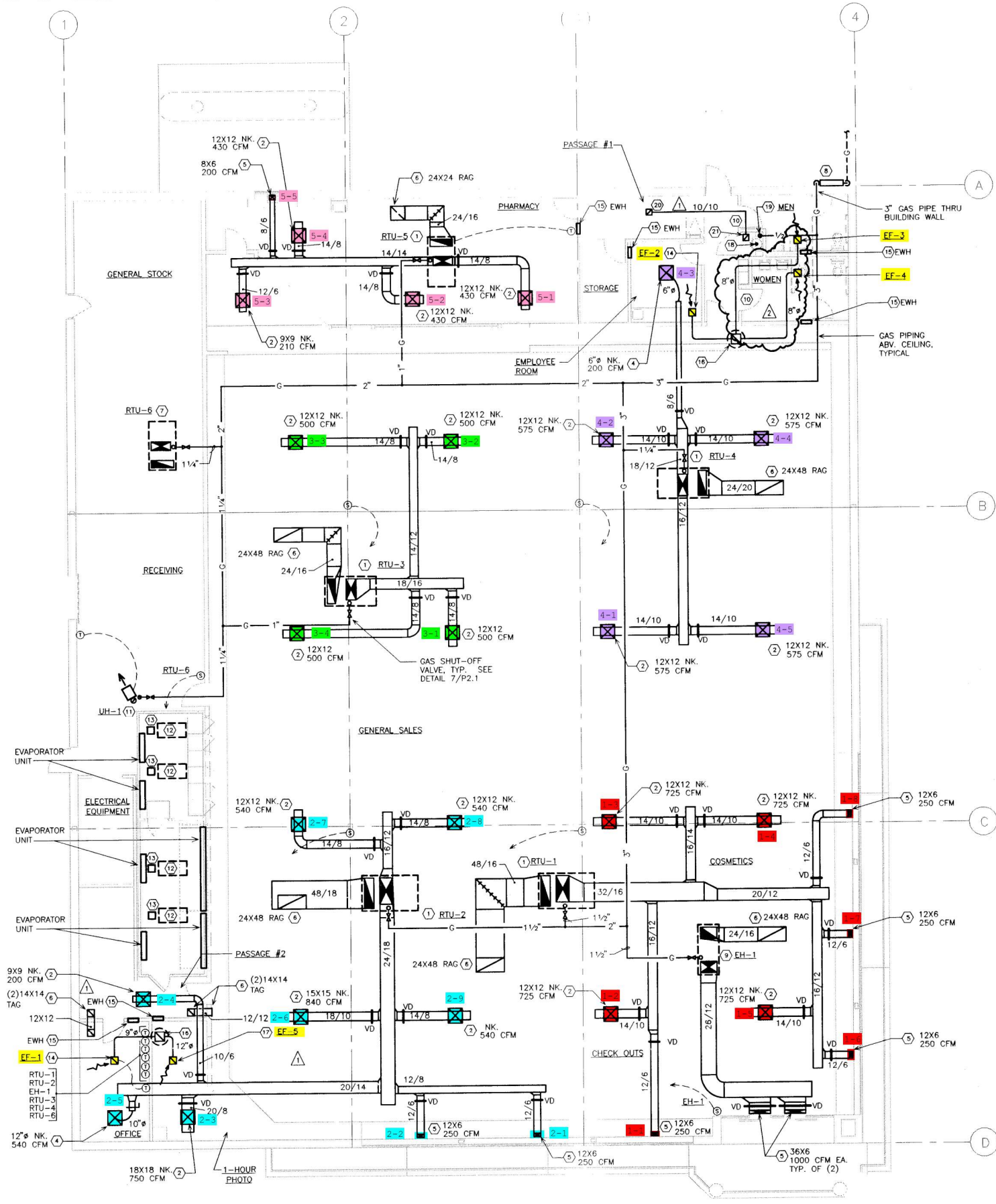
Drive Data		
	Design	Actual
Motor Sheave Size	-	NA
Motor Bore Size	-	NA
Motor Sheave SetPt	-	NA
Fan Sheave Size	-	NA
Fan Sheave Bore	-	NA
Belt CL Distance	-	NA
Num of Belts	-	NA
Belt Size	-	NA

Test Data		
	Design	Actual
CFM	750	NA
Fan RPM	928	NA
Fan Rotation	-	NA
Motor RPM	-	NA
RL Voltage	-	NA
RL Amperage	-	NA
Suction ESP	-	NA
Discharge ESP	-	NA
Total ESP	0.25"	NA

Completed By: Jordan Best on 08/10/2023

Notes:  
FAN REMOVED FROM PLANS PER MC

Written By: Jordan Best on 08/10/2023



FLOOR PLAN - HVAC  
 SCALE: 1/8" = 1'-0"