

Report By:

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NATIONAL

TAB

Comfort. Under control.

Report: TAB REPORT
Function: Test, Adjust, & Balance
Date: 01/09/2023

PROJECT

02-27-23 WALGREENS #3840 - BURIEN, WA

14656 AMBAUM BLVD SW

BURIEN, WA 98166

Client

Walgreens

200 WILMOT RD

DEERFIELD, IL 60015

National TAB

Project: 02-27-23 WALGREENS #3840 - BURIEN, WA

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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.



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02-27-23 WALGREENS #3840 - BURIEN, WA

Project Issue Information

Issue Name : EF-1 (Employee Break Room)

Description : EF-1 is not operational. Unable to balance

Created By : National TAB

Assigned To : National TAB - Will Turnbough

Status : Closed

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

Project Issue Response Details

• **04/28/2023 National TAB - Will Turnbough**

- Fan is operating now but is low on flow. Airflow is 137 CFM out of 150 CFM. Confirmed the backdraft damper is fully opening. Based on information found online the fan is capable of a maximum of 215 CFM. - https://content.greenheck.com/public/DAMProd/Original/10002/SPCSP_catalog.pdf



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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. Speed controller is also not installed.

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

Status : Pending

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

Project Issue File Details



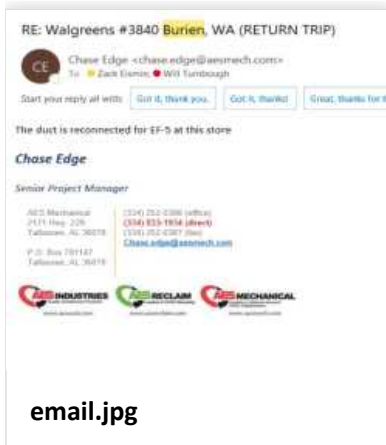
ef5.jpg



ef5speedcontroller.jp...

Project Issue Response Details

- **04/28/2023** **National TAB - Will Turnbough**
 - Per Chase's email on 4/11. The duct is now connected.



email.jpg

• **04/05/2023** **National TAB - Zack Eismin**

- The speed controller is now installed but not functional. It is not responding to adjustment. Airflow is 153 CFM out of 300 CFM design. Since speed controller not functional it is likely operating at highest speed. The fan label says it is rated for 150 CFM. Ductwork not connected at the fan.



ef5.jpg

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 | 2625 | 2513 | 2137 | 2011 | 488 | 502 | 18.6% | 20.0% | | | | | | |
| RTU-2 | SALES | 2625 | 2804 | 2237 | 2393 | 388 | 411 | 14.8% | 14.7% | | | | | | |
| RTU-3 | SALES | 2275 | 2170 | 2175 | 2076 | 100 | 94 | 4.4% | 4.3% | | | | | | |
| RTU-4 | SALES | 2625 | 2873 | 2137 | 2382 | 488 | 491 | 18.6% | 17.1% | | | | | | |
| RTU-5 | PHARMACY | 1050 | 989 | 1050 | 989 | 0 | 0 | 0.0% | 0.0% | | | | | | |
| RTU-6 | STOCKROOM | 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-5 | OFFICE | | | | | | | | | | | | | 300 | 153 |
| TOTALS | | 12250 | 12396 | 10686 | 10791 | 1564 | 1605 | | | 0 | 0 | 0 | 0 | 1000 | 395 |

NET BUILDING AIRFLOW CALCULATION

| TOTALS | DESIGN | ACTUAL |
|--------------------|------------|-------------|
| TOTAL OA | 1564 | 1605 |
| TOTAL EXHAUST | 1000 | 395 |
| NET AIRFLOW | 564 | 1210 |

NOTES:



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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 | RTU'S 5 & 6 ARE LABELED BACKWARDS. |

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 condensate 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 :



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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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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-EconOAEth-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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02-27-23 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 :



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02-27-23 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 | 69.2 DEGREES 31.7%RH |
| Pharmacy temperature and humidity measurement | 70.3 DEGREES 32.2%RH |
| Stock Room temperature and humidity measurement | 65.5 DEGREES 31.4%RH |
| Outdoor air temperature and humidity measurement | 55.1 DEGREES 30.4%RH |

Additional Comments:

Notes/Comments :



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02-27-23 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. | NA |
| 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. | NA |
| 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 :

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Project: 02-27-23 WALGREENS #3840 - BURIEN, WA

System/Unit: AHU/RTU



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Asset: RTU1

AREA:SALES

| Unit Data | | | Test Data | | |
|---------------------|--------------------|--------------------|------------------------|--------|-------------|
| | Design | Actual | | Design | Actual |
| MFG | YORK | YORK | SF CFM | 2625 | 2513 |
| Serial Num | - | N2K2996884 | SF RPM | 987 | 829 |
| Model Num | ZJ090N12R2B5GCB2R2 | ZJ090N12R2B5GCB2R2 | RA CFM | 2137 | 2011 |
| Type | RTU | RTU | OA CFM | 488 | 502 |
| Configuration | VERTICAL | VERTICAL | RL Voltage | - | 209/208/209 |
| Num OA Filters 1 | - | 1 | RL Amperage | - | 8.1/8.2/8.1 |
| OA Filter Size 1 | - | 20X29 | SF Rotation | - | CCW |
| Num Final Filter 1 | - | 2 | RA Damper Position | - | 80% |
| Final Filter Size 1 | - | 21X45X2 | 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 |

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Notes:

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Project:02-27-23 WALGREENS #3840 - BURIEN, WA

AHU/RTU



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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 |

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Project: 02-27-23 WALGREENS #3840 - BURIEN, WA

System/Unit: AHU/RTU



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Asset: RTU2

AREA:SALES

| Unit Data | | | Test Data | | |
|---------------------|--------------------|--------------------|------------------------|--------|-------------|
| | Design | Actual | | Design | Actual |
| MFG | YORK | YORK | \$F CFM | 2625 | 2804 |
| Serial Num | - | N2L2019508 | \$F RPM | 1314 | 923 |
| Model Num | ZR090N12R2B5GCB2R1 | ZR090N12R2B5GCB2R1 | RA CFM | 2237 | 2393 |
| Type | RTU | RTU | OA CFM | 388 | 411 |
| Configuration | VERTICAL | VERTICAL | RL Voltage | - | 208/209/207 |
| Num OA Filters 1 | - | 1 | RL Amperage | - | 7.5/7.8/8 |
| OA Filter Size 1 | - | 20X29 | \$F Rotation | - | CCW |
| Num Final Filter 1 | - | 2 | RA Damper Position | - | 85% |
| Final Filter Size 1 | - | 17X51 | 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 |

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Notes:

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Project:02-27-23 WALGREENS #3840 - BURIEN, WA

AHU/RTU



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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 |

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Project: 02-27-23 WALGREENS #3840 - BURIEN, WA

System/Unit: AHU/RTU



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Asset: RTU3

AREA:SALES

| Unit Data | | | Test Data | | |
|---------------------|--------------------|--------------------|------------------------|--------|-------------|
| | Design | Actual | | Design | Actual |
| MFG | YORK | YORK | SF CFM | 2275 | 2170 |
| Serial Num | - | N2E2377579 | SF RPM | 974 | 823 |
| Model Num | ZT078N12R2B5GCB2R1 | ZT078N12R2B5GCB2R1 | RA CFM | 2175 | 2076 |
| Type | RTU | RTU | OA CFM | 100 | 94 |
| Configuration | VERTICAL | VERTICAL | RL Voltage | - | 209/208/208 |
| Num OA Filters 1 | - | 1 | RL Amperage | - | 5.6/5.4/5.6 |
| OA Filter Size 1 | - | 29X20 | SF Rotation | - | CCW |
| Num Final Filter 1 | - | 2 | RA Damper Position | - | 90% |
| Final Filter Size 1 | - | 21X46X2 | 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:

National TAB

Project:02-27-23 WALGREENS #3840 - BURIEN, WA

AHU/RTU



Comfort. Under control.

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: 02-27-23 WALGREENS #3840 - BURIEN, WA

System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU4

AREA:SALES

| Unit Data | | | Test Data | | |
|---------------------|--------------------|--------------------|------------------------|--------|-------------|
| | Design | Actual | | Design | Actual |
| MFG | YORK | YORK | SF CFM | 2625 | 2873 |
| Serial Num | - | N2K2996885 | SF RPM | 987 | 834 |
| Model Num | ZJ090N12R2B5GCB2R2 | ZJ090N12R2B5GCB2R2 | RA CFM | 2137 | 2382 |
| Type | RTU | RTU | OA CFM | 488 | 491 |
| Configuration | VERTICAL | VERTICAL | RL Voltage | - | 209/208/207 |
| Num OA Filters 1 | - | 1 | RL Amperage | - | 7.2/7.2/7.3 |
| OA Filter Size 1 | - | 21X29 | SF Rotation | - | CCW |
| Num Final Filter 1 | - | 2 | RA Damper Position | - | 75% |
| Final Filter Size 1 | - | 20X45X2 | Min OA Damper Position | - | 25% |
| | | | 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 | - | -0.63" |
| Fan Suction SP | - | -0.75" |
| Fan Discharge SP | - | 0.56" |
| Total ESP | 1.2" | 1.19" |

| General | | |
|---------|--------|--------|
| | Design | Actual |
| | | |

| 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 |

Completed By: Zack Eismin

Notes:

National TAB

Project:02-27-23 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 | NA | NA | 350 | 1 | 502 | 382 | 382 | 109.1 |
| SGRD2 | SALES | NA | NA | 350 | 1 | 521 | 389 | 389 | 111.1 |
| SGRD3 | SALES | NA | NA | 350 | 1 | 289 | 391 | 391 | 111.7 |
| SGRD4 | SALES | NA | NA | 350 | 1 | 359 | 389 | 389 | 111.1 |
| SGRD5 | SALES | NA | NA | 350 | 1 | 421 | 381 | 381 | 108.9 |
| SGRD6 | SALES | NA | NA | 350 | 1 | 391 | 396 | 396 | 113.1 |
| SGRD7 | SALES | NA | NA | 263 | 1 | 192 | 284 | 284 | 108.0 |
| SGRD8 | SALES | NA | NA | 131 | 1 | 122 | 137 | 133 | 101.5 |
| SGRD9 | SALES | NA | NA | 131 | 1 | 152 | 128 | 128 | 97.7 |

Completed By: Brianna Biggs on

National TAB

Project: 02-27-23 WALGREENS #3840 - BURIEN, WA

System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU5

AREA:PHARMACY

| Unit Data | | | Test Data | | |
|---------------------|--------------------|--------------------|------------------------|--------|---------------|
| | Design | Actual | | Design | Actual |
| MFG | YORK | YORK | SF CFM | 1050 | 995 |
| Serial Num | - | N2E2506745 | SF RPM | 960 | 521 |
| Model Num | ZJ037N08D2B5BCB2R3 | ZJ037N08D2B5BCB2R3 | RA CFM | 1050 | 989 |
| Type | RTU | RTU | OA CFM | 0 | 0 |
| Configuration | VERTICAL | VERTICAL | RL Voltage | - | 208/209/207 |
| Num OA Filters 1 | - | 1 | RL Amperage | - | 3.12/3.14/3.2 |
| OA Filter Size 1 | - | 29X20 | SF Rotation | - | CCW |
| Num Final Filter 1 | - | 2 | RA Damper Position | - | 100% |
| Final Filter Size 1 | - | 16X40X2 | 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.

National TAB

Project:02-27-23 WALGREENS #3840 - BURIEN, WA

AHU/RTU



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 | 250 | 1 | 473 | 273 | 247 | 98.8 |
| SGRD2 | PHARMACY | NA | NA | 250 | 1 | 488 | 288 | 247 | 98.8 |
| SGRD3 | PHARMACY | NA | NA | 250 | 1 | 479 | 279 | 231 | 92.4 |
| SGRD4 | PHARMACY | NA | NA | 250 | 1 | 301 | 111 | 227 | 90.8 |
| SGRD5 | HEALTH SERVICES ROOM | NA | NA | 40 | 1 | 58 | 38 | 43 | 107.5 |

Completed By: Will Turnbough on

| Asset | Notes |
|-------|------------------------------------|
| SGRD5 | EXTRA DIFFUSER NOT SHOWN ON PLANS. |

National TAB

Project: 02-27-23 WALGREENS #3840 - BURIEN, WA

System/Unit: AHU/RTU



Comfort. Under control.

Asset: RTU6

AREA:STORAGE

| Unit Data | | | Test Data | | |
|---------------------|--------------------|--------------------|------------------------|--------|----------------|
| | Design | Actual | | Design | Actual |
| MFG | YORK | YORK | SF CFM | 1050 | 1047 |
| Serial Num | - | N2E2506744 | SF RPM | 960 | 542 |
| Model Num | ZJ037N08D2B5BCB2R3 | ZJ037N08D2B5BCB2R3 | RA CFM | 950 | 940 |
| Type | RTU | RTU | OA CFM | 100 | 107 |
| Configuration | VERTICAL | VERTICAL | RL Voltage | - | 208/208/209 |
| Num OA Filters 1 | - | 1 | RL Amperage | - | 3.25/3.24/3.14 |
| OA Filter Size 1 | - | 20X29 | SF Rotation | - | CCW |
| Num Final Filter 1 | - | 2 | RA Damper Position | - | 90% |
| Final Filter Size 1 | - | 16X50X2 | 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: 02-27-23 WALGREENS #3840 - BURIEN, WA

System/Unit: FAN - Exhaust



Comfort. Under control.

Asset: EF1

AREA:EMPLOYEE ROOM

| Unit Data | | |
|----------------------|---------------|-------------|
| | Design | Actual |
| MFG | PENN | GREENHECK |
| Model Num | ZEPHYR-Z85TDA | CSP-A190-QD |
| Serial Num | - | 20975181 |
| Type | CEILING | CEILING |
| Configuration | VERTICAL | VERTICAL |

| Test Data | | |
|---------------------|--------|--------|
| | Design | Actual |
| CFM | 300 | 137 |
| System SetPt | - | ON |
| Total ESP | 0.33" | 0.21" |

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

Completed By: Zack Eismin

Notes:

National TAB

Project: 02-27-23 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: 02-27-23 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: 02-27-23 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: 02-27-23 WALGREENS #3840 - BURIEN, WA

System/Unit: FAN - Exhaust



Comfort. Under control.

Asset: EF5

AREA:OFFICE

| Unit Data | | |
|---------------|---------------|------------|
| | Design | Actual |
| MFG | PENN | NUTOME |
| Model Num | ZEPHYR-Z8HTDA | QTXEN150-B |
| Serial Num | - | NA |
| Type | CEILING | CEILING |
| Configuration | VERTICAL | HORIZONTAL |

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

| Motor Data | | |
|------------------|--------|--------|
| | Design | Actual |
| Horsepower | 0.08 | NA |
| Phase | 1 | 1 |
| Voltage (rated) | 115 | 120 |
| Amperage (rated) | - | 0.5 |

Completed By: Zack Eismin

Notes:

National TAB

Project: 02-27-23 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: 02-27-23 WALGREENS #3840 - BURIEN, WA

System/Unit: FAN - Exhaust



Comfort. Under control.

Asset: EF7

AREA:MEZZANINE

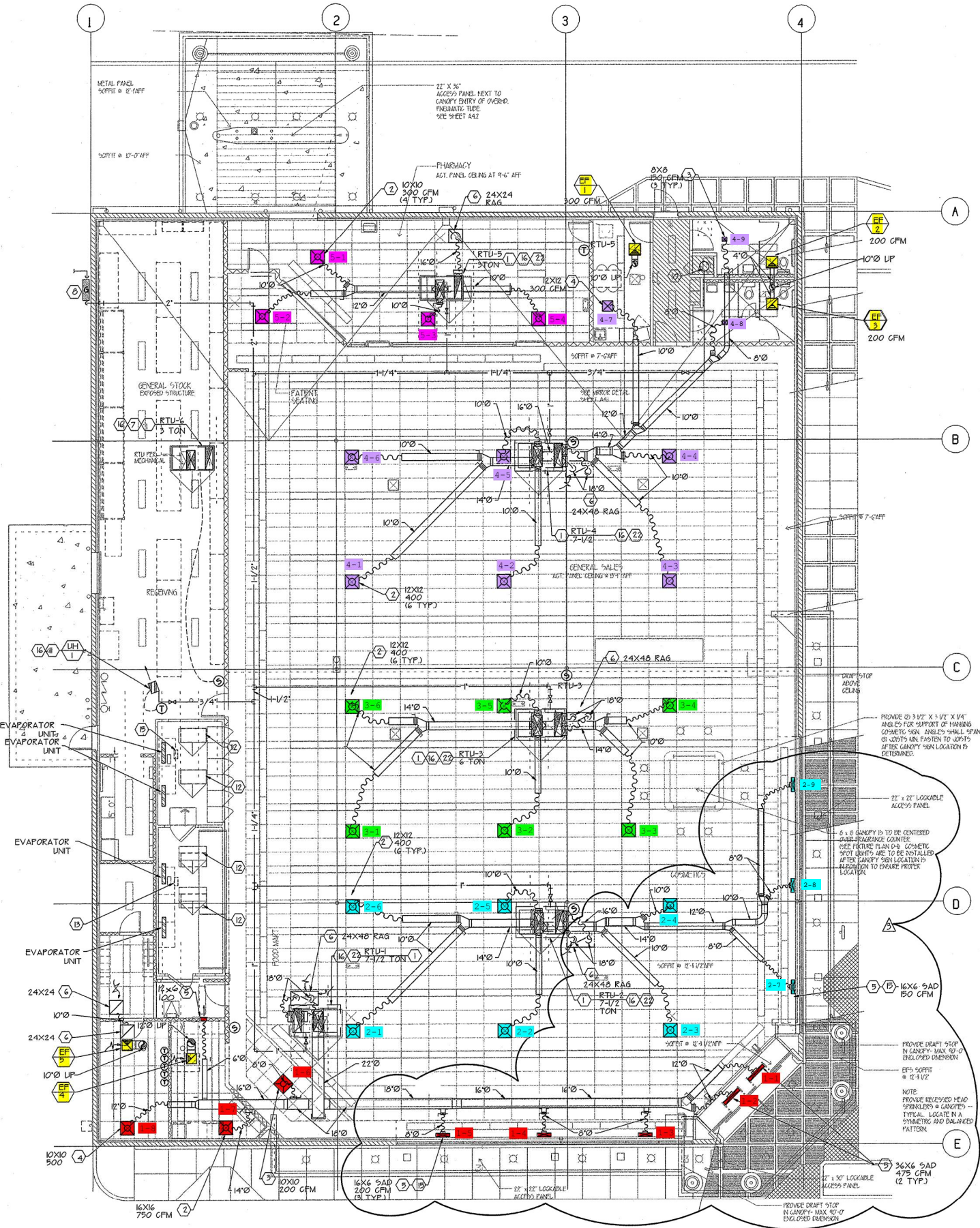
| Unit Data | | |
|---------------|-------------|-------------|
| | Design | Actual |
| MFG | PENN | PENN |
| Model Num | ZEPHYR-Z10H | ZEPHYR-Z10H |
| Serial Num | - | - |
| Type | CEILING | - |
| Configuration | VERTICAL | - |

| 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"