

Report By:

National TAB
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Report: Bruegger's CVG
Function: Test, Adjust, & Balance
Date: 02/04/2025
Completed By: National TAB

PROJECT
Bruegger's (CVG - Hebron, KY)

2939 Terminal Drive Concourse B

Hebron, KY 41048

Client

Project One
28985 N 120th Dr
Peoria, AZ 85383

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Project: Bruegger's (CVG - Hebron, KY)

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CERTIFICATION



PROJECT: Bruegger's (CVG Airport)
Northern Kentucky

The data presented in this report is a record of system measurements and final adjustments that have been obtained in accordance with the current edition of the NEBB *Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems*. Any variances from design quantities, which exceed NEBB tolerances, are noted in the Test-Adjust-Balance Report Project Summary.


The air distribution system has been tested and balanced and final adjustments have been made in accordance with NEBB standards and the project specifications.

NEBB TAB FIRM: National TAB
REGISTRATION NO: 3629
CERTIFIED BY: Joe Hertenstein
DATE: 2/5/2025

The hydronic distribution system has been tested and balanced and final adjustments have been made in accordance with NEBB standards and the project specifications.

NEBB TAB FIRM: National TAB
REGISTRATION NO: 3629
CERTIFIED BY: Joe Hertenstein
DATE: 2/5/2025

Submitted and Certified by:

NEBB TAB FIRM: National TAB
TAB PROFESSIONAL: Joe Hertenstein
SIGNATURE: 
REGISTRATION NO: 3629
CERTIFICATION EXP: 12/31/2025





National TAB

Testing, Adjusting, and Balancing Equipment



| Function | | Range | Minimum Accuracy | Instrument Information | Calibration Date | Date Due |
|-------------|-----------------------------------|---------------------------|------------------------------|--------------------------------------|------------------|------------|
| AIR | AIR PRESSURE | 0 in wg to 10 in wg | 2% +/- 0.001 in wg | Shortridge ADM-880C S/N M05066 | 10/15/2024 | 10/15/2025 |
| | AIR VELOCITY INSTRUMENT | 50 fpm to 3900 fpm | +/- 5 % +/- 7 fpm | Shortridge ADM-880C S/N M05066 | 10/15/2024 | 10/15/2025 |
| | DIRECT HOOD READING | 100 cfm to 2000 cfm | +/- 3 % +/- 7 cfm | Shortridge Flow Hood | 10/15/2024 | 10/15/2025 |
| TEMPERATURE | AIR METER | -20 F to 240 F | +/- .5 % 2 F | Cooper ATKINS - SRH77A S/N 081820093 | 10/15/2024 | 10/15/2025 |
| | AIR PROBE | -20 F to 240 F | +/- .5 % 2 F | Cooper ATKINS - PD1388 7-6 S/N 5028 | 10/15/2024 | 10/15/2025 |
| | IMMERSION METER | -20 F to 240 F | +/- .5 % 2 F | Cooper ATKINS - SRH77A S/N 081820093 | 10/15/2024 | 10/15/2025 |
| | IMMERSION PROBE | -20 F to 240 F | +/- .5 % 2 F | Cooper ATKINS - PD1388 7-6 S/N 1075 | 10/15/2024 | 10/15/2025 |
| | CONTACT METER | -20 F to 240 F | +/- .5 % 2 F | Cooper ATKINS - SRH77A S/N 081820093 | 10/15/2024 | 10/15/2025 |
| | CONTACT PROBE | -20 F to 240 F | +/- .5 % 2 F | Cooper ATKINS - PD1388 7-6 S/N 4011 | 10/15/2024 | 10/15/2025 |
| HUMIDITY | HUMIDITY PROBE | 10 % RH to 90 % RH | 3% of reading | Cooper ATKINS - SRH77A S/N 090315046 | 10/15/2024 | 10/15/2025 |
| ELECTRICAL | VOLTAGE MEASUREMENT | 0 VAC to 600 VAC | 2 % reading +/- 5 digits | Dwyer CM-1 - S/N 190800099 | 10/15/2024 | 10/15/2025 |
| | AMPERAGE MEASUREMENT | 0 Amperers to 100 Amperes | 2 % reading +/- 5 digits | Dwyer CM-1 - S/N 190800099 | 10/15/2024 | 10/15/2025 |
| ROTATION | ROTATION MEASUREMENT | 60 rpm to 5000 rpm | 2 % reading 2 rpm | Dwyer TAC-L - S/N S1100123 | 10/15/2024 | 10/15/2025 |
| HYDRONIC | PRESSURE MEASUREMENT | -30 in Hg to 200 psi | ±2% of reading +/- 1 psi | Dwyer 490W-6 - S/N 01L6NK | 6/3/2024 | 6/3/2025 |
| | DIFFERENTIAL PRESSURE MEASUREMENT | 0 psi - 80 psi | ±2% of reading +/- 1 psi | Dwyer 490W-6 - S/N 01L6NK | 6/3/2024 | 6/3/2025 |
| DALT | DUCT LEAKAGE | -10" - +10" wc | ±1% of reading +/- 0.004" wc | Kanomax DALT 6900 S/N: 080439 | 3/2024 | 3/1/2025 |

Bruegger's Bagels CVG

Summary

Our scope of work for this job included TAB of one RTU, and two existing VAVs. Our main goals were to verify the space was getting adequate airflow and that we were remaining within the unit specifications. The airflow was measured from the diffusers via flow hood and the diffuser total was used for the unit total.

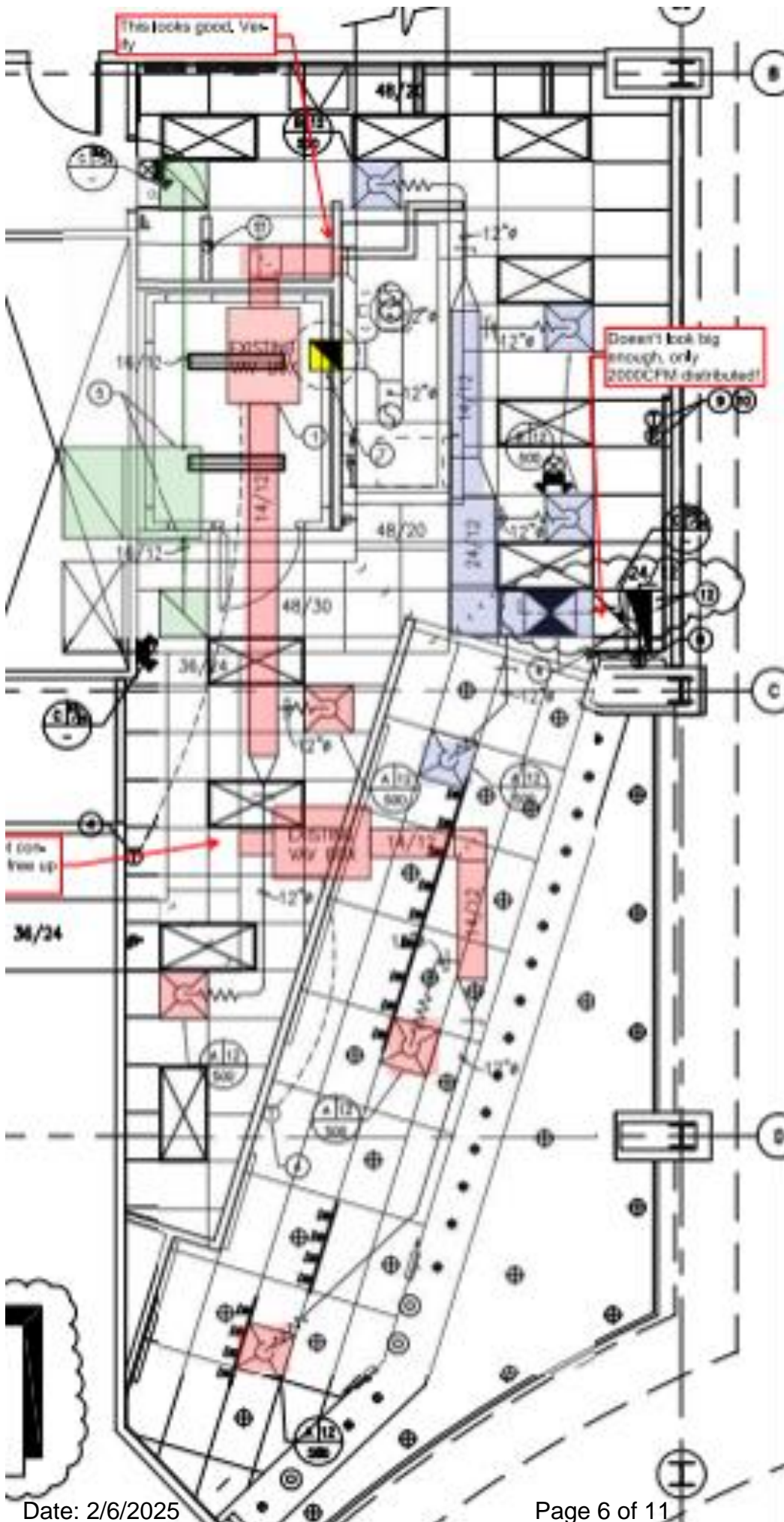
The 8.5 Ton RTU that was installed had three diffusers at the back of house and one in the front. The ductwork was sized to accommodate 500 cfm per diffuser for a total of 2,000 cfm. However, the unit tonnage of 8.5 would require a minimum of approximately 2,700 cfm. We set the unit to this minimum airflow to prevent the coils from freezing during cooling. Due to the relatively high positive pressure (outside air) of the surrounding airport terminals there was no need for minimum outdoor air, so this was left closed at minimum at the request of the team.

The existing VAVs that are ducted off the main trunkline of an existing larger airport AHU unit was measured under normal operation (maintaining space temp setpoint), as there were no visible controls and we were unable to get in touch with the airport controls technician. These VAVs were designed for 1,000 cfm each. One VAV was right at 1,000cfm while the other was closer to 350cfm.

The hood exhaust was read via Velocity matrix within the exhaust duct to ensure adequate flow for the application.

Conclusion

The space was originally designed to have 4,000 cfm of supply airflow. With the two VAVs and the RTU the space had 4,100cfm which is well within design tolerances in respect to total space conditioning requirements.



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Project: Bruegger's (CVG - Hebron, KY)

System/Unit: AHU/RTU



Asset: RTU-1

AREA:ROOF

| Unit Data | | |
|------------------|--------|--------------|
| | Design | Actual |
| MFG | NA | YORK |
| Serial Num | - | N2B4153342 |
| Model Num | NA | ZJ102N18R4D1 |
| Configuration | - | VERTICAL |
| OA Filter Size 1 | - | 1-31"x23" |
| Num PreFilter 1 | - | 4 |
| PreFilter Size 1 | - | 20"x24"x2" |

| Test Data | | |
|------------------------|--------|-------------|
| | Design | Actual |
| SF CFM | - | 2697 |
| RA CFM | - | 2697 |
| OA CFM | - | 0 |
| RL Voltage | - | 483/483/485 |
| RL Amperage | - | 3.5 VFD |
| SF Motor Freq(HZ) | - | 60HZ |
| SF System SetPt | - | 100% |
| Min OA Damper Position | - | 0% |
| Brake Horse Power | - | 2.6 |

| Motor Data | | |
|----------------|--------|--------|
| | Design | Actual |
| Motor MFG | - | BALDOR |
| Frame | - | 56HZ |
| Horsepower | - | 3 |
| Motor Rpm | - | 1750 |
| Phase | - | 3 |
| Rated Voltage | - | 460 |
| Rated Amperage | - | 4.1 |
| Service Factor | - | 1.15 |

| Performance Data | | |
|------------------|--------|--------|
| | Design | Actual |
| MA Plenum SP | - | -0.59" |
| Fan Suction SP | - | -0.73" |
| Fan Discharge SP | - | 0.85" |
| Total ESP | - | 1.44" |
| Fan Total SP | - | 1.58" |

| Drive Data | |
|--------------------|--------|
| | Actual |
| Motor Sheave Size | 1VM50 |
| Motor Bore Size | 7/8 |
| Motor Sheave SetPt | NA |
| Fan Sheave Size | 7" |
| Fan Sheave Bore | 1" |
| Belt CL Distance | 20" |
| Num of Belts | 1 |
| Belt Size | A54 |

Completed By: Gabe Merk on 02/04/2025

Notes:

Upon arrival had excessive supply air temp cooling warning.
Unit is 8.5 Ton unit. Have to keep airflow no lower than 2700 CFM.

Written By: Joe Hertenstein on 02/06/2025

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 Project:Bruegger's (CVG - Hebron, KY)
AHU/RTU



Diffuser Supply (GRD)

RTU-1/ROOF

| Asset | | | | | | |
|-------------------|-----------------|-------------|-------------|-------------------|---------------|------------------|
| Asset Name | Location | Type | Size | DESIGN CFM | CFM(1) | FINAL CFM |
| RTU-1-SGRD1 | BACK OF HOUSE | B | 12 | 500 | 334 | 690 |
| RTU-1-SGRD2 | BACK OF HOUSE | B | 12 | 500 | 282 | 733 |
| RTU-1-SGRD3 | BACK OF HOUSE | B | 12 | 500 | 276 | 590 |
| RTU-1-SGRD4 | FRONT OF HOUSE | B | 12 | 500 | 322 | 684 |
| Total | | | | 2000 | 1214 | 2697 |

Completed By: Gabe Merk on 02/04/2025

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Project: Bruegger's (CVG - Hebron, KY)

VAV-Fan Powered Box



VAV/

| Asset | | |
|------------|---------------------|--------------|
| Asset Name | Design Max Cool CFM | Max Cool CFM |
| FPB1 | 1000 | 357 |

Completed By: Gabe Merk on 02/04/2025

| Asset | Notes | Date | Written By |
|-------|---|------------|------------|
| FPB1 | EXISTING FAN POWERED VAV CONNECTED TO LARGER AIRPORT SUPPLY. UNABLE TO CONTROL. READ AS IS. | 02/04/2025 | Gabe Merk |

Diffuser Supply (GRD)

FPB1/

| Asset | | | | | |
|------------|---------------|------|------|------------|-----------|
| Asset Name | Location | Type | Size | DESIGN CFM | FINAL CFM |
| FPB1-SGRD1 | BACK OF HOUSE | B | 12 | 500 | 200 |
| FPB1-SGRD2 | BACK OF HOUSE | B | 12 | 500 | 157 |
| Total | | | | 1000 | 357 |

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Project:Bruegger's (CVG - Hebron, KY)

VAV-Fan Powered Box



VAV/

| Asset | | |
|------------|---------------------|--------------|
| Asset Name | Design Max Cool CFM | Max Cool CFM |
| FPB2 | 1000 | 1046 |

Completed By: Gabe Merk on 02/04/2025

| Asset | Notes | Date | Written By |
|-------|---|------------|------------|
| FPB2 | EXISTING FAN POWERED VAV CONNECTED TO LARGER AIRPORT SUPPLY. UNABLE TO CONTROL. READ AS IS. | 02/04/2025 | Gabe Merk |

Diffuser Supply (GRD)

FPB2/

| Asset | | | | | |
|------------|----------------|------|------|------------|-----------|
| Asset Name | Location | Type | Size | DESIGN CFM | FINAL CFM |
| FPB2-SGRD1 | FRONT OF HOUSE | B | 12 | 500 | 684 |
| FPB2-SGRD2 | FRONT OF HOUSE | B | 12 | 500 | 362 |
| Total | | | | 1000 | 1046 |

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Project: Bruegger's (CVG - Hebron, KY)
System/Unit: FAN - Exhaust



Asset: EF1

AREA:

| Unit Data | | |
|------------|--------|-------------|
| | Design | Actual |
| MFG | NA | CAPTIVEAIRE |
| Model Num | NA | NCA10FA |
| Serial Num | - | 1625316 |
| Type | - | UPBLAST |

| Test Data | | |
|-----------|--------|--------|
| | Design | Actual |
| CFM | - | 1835 |

| Motor Data | | |
|------------------|--------|--------|
| | Design | Actual |
| Horsepower | - | 0.5 |
| Phase | - | 3 |
| Voltage (rated) | - | 208 |
| Amperage (rated) | - | 1.8 |

Completed By: Gabe Merk on 02/04/2025