

Report By:

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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





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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.

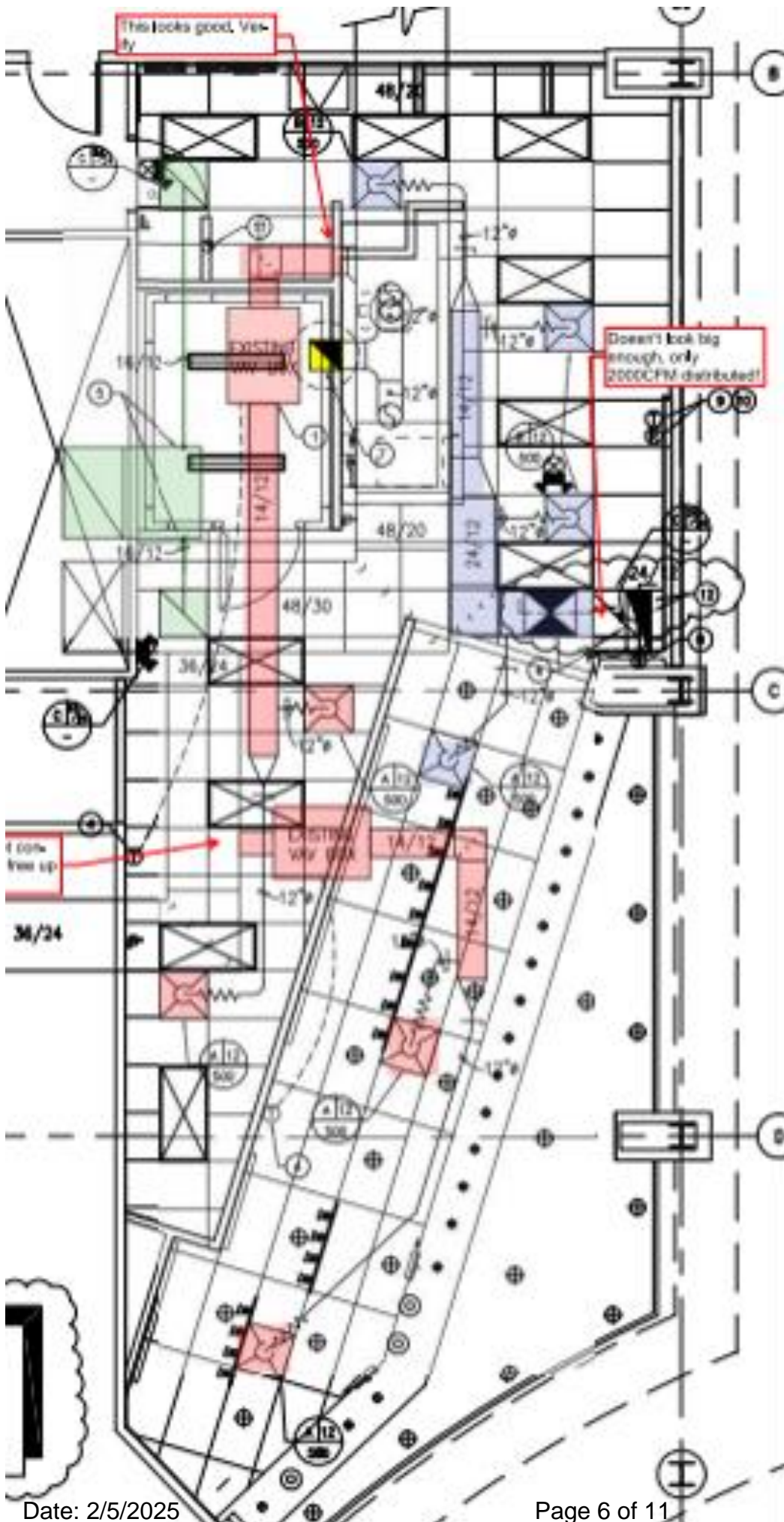
The 8.5 Ton RTU that was installed had three diffusers at the back of house and one in the front. The ductwork was sized to accommodate 500 cfm per diffuser for a total of 2,000 cfm. However, the unit tonnage of 8.5 would require a minimum of approximately 2,700 cfm. We set the unit to this minimum airflow 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:
Excessive supply air temp cooling warning.
UNIT OVESIZED FOR THE SPACE AND DESIGNED AIRFLOW.

Written By: Gabe Merk on 02/04/2025

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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