Report By:

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

Report: BET Report

Function: Building Envelope Test (BET)

Date: 08/25/2025

PROJECT

Cosmo Burger

1813, 1815, 1817, 1819 Locust Street

Kansas City, MO 64108

Client

Chief Heating & Cooling Inc.

National TAB

Project: Cosmo Burger

Table Of Contents

Cosmo Burger

PROJECT TEAM MEMBERS

Architect/Engineer/Consultant:	Alinea Architects
Building Envelope Test (BET):	National TAB Intelligence - Kansas City 1126 Swift St North Kansas City, MO, 64116

CERTIFICATION

PROJECT: Cosmo Burger Development

The data represented in this reprot is a record of the whole building air leakage test that has been obtained in accordance with the current edition of the NEBB Procedural Standard for Building Enclosure Testing. Any exceptions are noted within the Executive Summary of this report.

NEBB TAB FIRM: National TAB - Kansas City
REGISTRATION NO: 3768
CERTIFIED BY: Will Turnbough
DATE: 8/25/2025

Submitted and Certified by:

NEBB TAB FIRM: National TAB - Kansas City
TAB PROFESSIONAL: Will Turnbough
REGISTRATION NO: CP-24289
CERTIFICATION EXP: 12/31/2025

National TAB

Building Enclosure Testing 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	Evergreen S-PVF-1 24D-00281	3/14/2025	3/14/2026
	AIR VELOCITY INSTRUMENT	50 fpm to 3900 fpm	+/- 5 % +/- 7 fpm	Evergreen S-PVF-1 24D-00281	3/14/2025	3/14/2026
TEMPERATURE	AIR METER	-20 F to 240 F	+/- .5 % 2 F	Evergreen S-PVF-1 24D-00281	3/14/2025	3/14/2026
	AIR PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	IMMERSION METER	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	IMMERSION PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	CONTACT METER	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	CONTACT PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
TEMP DOCUMENTATION	THERMAL CAMERA	-4 F to 450 F	+/-2% of reading	FLIR E8 Pro S/N 13316880	12/9/2024	12/9/2025
DIGITAL PRESSURE FLOW MEASUREMENT SYSTEM	DIGITAL PRESSURE FLOW MEASUREMENT SYSTEM	Not applicable	+/-4% of reading	Retrotec DM32X 10A S/N 503154	11/21/2024	11/21/2025

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Test Results Summary

P_{ref}: 0.30” (75Pa)	Allowable Leakage Rate:	0.40 CFM/ft^2	Allowable Leakage:	13140 CFM
	Actual Leakage Rate:	0.39 CFM/ft^2	Actual Leakage:	12883 CFM

Executive Summary

A building enclosure test was performed at the 1813 Locust Development Building. The building consists of Cosmo as well as an empty tenant on the north side. Per the architect, these spaces form their own air barrier separate from the rest of the building. North of the empty tenant space is another empty tenant space that appears to be in disrepair. The test was performed per the 2021 International Energy Code using the ASTM E1827 methodology and NEBB Procedural Standard.

Prior to the test, the architect provided the enclosure square footage which was 32851 ft^2 and was used in the calculations.

Two Retrotec model 3000SR fans were used to test the air barrier and were installed in Room 100 (Vestibule).

The acceptable leakage rate is 0.40 CFM/ft^2 at 0.3” wc (75 Pa). During depressurization the actual leakage rate was measured as 0.39 CFM/ft^2 which is within tolerance. The pressurization test was performed however the results are inconclusive because the restaurant portion of the building was open for business and their operations were affecting a successful test. The pressurization tests and depressurization tests should have similar leakage rates.

Infrared images are provided below for reference of areas with noticeable leakage. Since the depressurization results passed, no action is required.

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Figure 1. North side of the empty tenant space

Figure 2. North side of the empty tenant space

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Figure 3. Near garage door on East side

Figure 4. Near garage door on East side

Required Values Needed Prior to Running Calculations	
13140.4	Allowable Leakage (CFM/ft2) @ Reference pressure (inH2O)
32851	Building Enclosure (ft^2)
0.4	Acceptable Leakage Rate (CFM/ft^2)
13140	Acceptable CFM
902	E = Altitude Above Sea Level (Ft)

Required Field Measurements	
73	T_{in} = Inside Temperature (F)
77	T_{out} = Outside Temperature (F)
0.0012	Pbaseline1 (Average of pre-test baseline readings)
0.0015	Pbaseline2 (Average of post-test baseline readings)

Constants	
0.07517	ρ_s (Standard Air Density) lbm/ft3
0.002629	b (lbm/(ft*h*F^0.5)
198.7	s (F)
0.04359	μe (Reference air viscosity)

1Pa = 0.00401" H20
1" H20 = 249 Pa

Air Density	
0.0721	ρin - Inside (lbm/ft^3)
0.0716	ρout - Outside (lbm/ft^3)

Air Dynamic Viscosity	
0.0442	μin (lbm/ft*hr)
0.0444	μout (lbm/ft*hr)

Depressurization - Fan 1

Reading #	Pressure	Pavg	Penc	Airflow (CFM)	Qavg	Qenc
1	0.1000			3520		
2	0.0982			3380		
3	0.1011	0.0993	0.0980	3335	3371	3396
4	0.0990			3320		
5	0.0982			3300		
1	0.2987			6520		
2	0.3003			6360		
3	0.2995	0.2993	0.2980	6285	6389	6341
4	0.2991			6500		
5	0.2987			6280		

n = 0.56
0.45≤n≤0.80

C (Flow Coefficient	12266
P_{ref}	0.3
Eff Leakage Area	409.73275
Uncertainty Q_{ref}	1.8%
Bias of Q_{ref}	2.1%

Depressurization - Fan 2

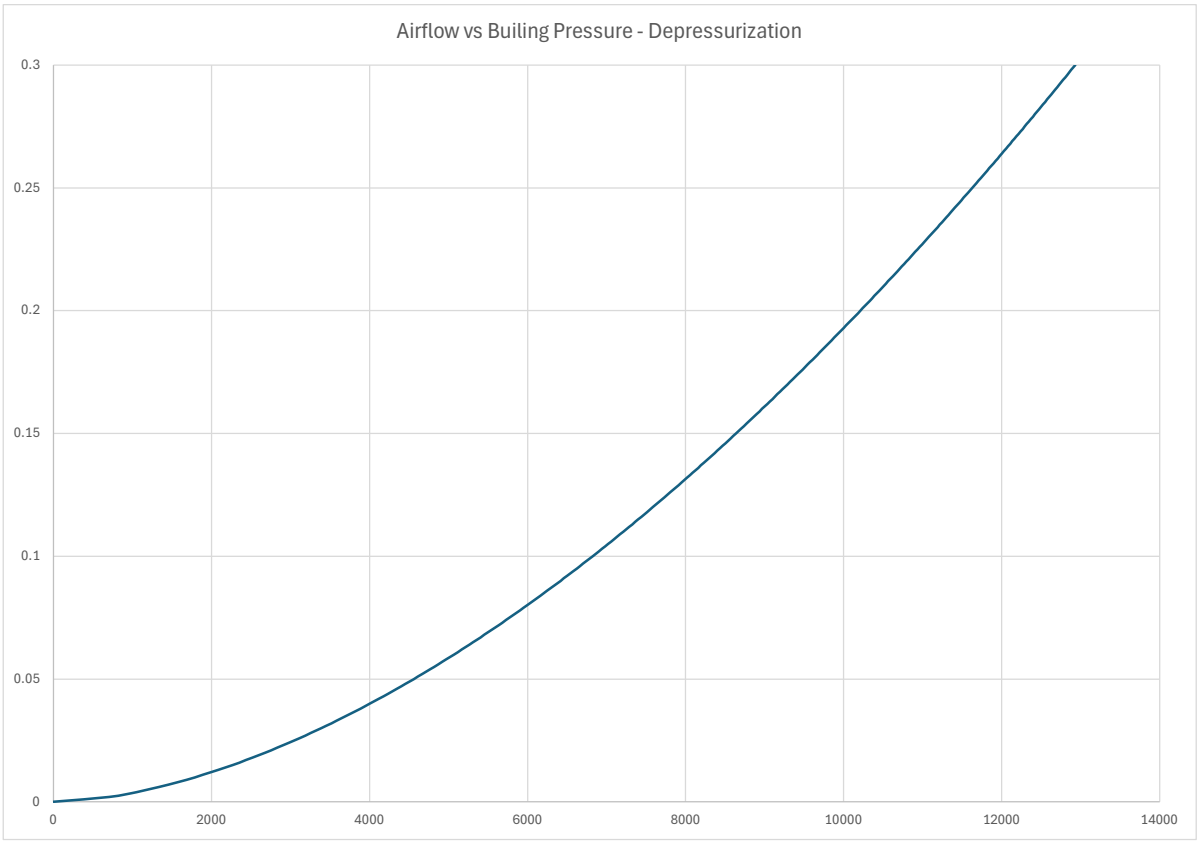
Reading #	Pressure	Pavg	Penc	Airflow (CFM)	Qavg	Qenc
1	0.0918			3245		
2	0.1015			3280		
3	0.1015	0.0985	0.0971	3315	3303	3328
4	0.0974			3410		
5	0.1003			3265		
1	0.2995			6615		
2	0.3016			6635		
3	0.2999	0.2996	0.2983	6590	6591	6542
4	0.2991			6505		
5	0.2979			6610		

n = 0.60
0.45≤n≤0.80

C (Flow Coefficient	13333
P_{ref}	0.3
Eff Leakage Area	423.84409
Uncertainty Q_{ref}	0.9%
Bias of Q_{ref}	2.1%

Depressurization - Combined

Reading #	Qavg	Qenc
1		
2		
3	6674	6724
4		
5		
1		
2		
3	12980	12883
4		
5		


Airflow vs Builing Pressure - Depressurization
0.3
0.25
0.2
0.15
0.1
0.05
0
0
2000
4000
6000
8000
10000
12000
14000