

**Report By:**

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

**NATIONAL**

**TAB**

Comfort. Under control.

**Report: FINAL TAB REPORT  
Function: Test, Adjust, & Balance  
Date: 07/25/2022**

**PROJECT  
08-29 NIKE LIVE - CARY, NC**

4 FENTON ST

CARY, NC

**Client**

Construction One  
101 E. Town St  
Suite 401  
Columbus, OH 43215

# National TAB

Project: 08-29 NIKE LIVE - CARY, NC

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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.

### FCU's w/ Diffusers

Each of the FCU's were measured at their terminal devices utilizing a flow hood. The sum of these readings is equal to the total flow for that particular unit. The total flow of each FCU was then adjusted to within tolerance of the specified design. Each terminal diffuser was balanced to within tolerance of the engineer's design volume utilizing the provided hand damper located at the takeoff of the main & branch trunk line(s). Any equipment that fell outside of this tolerance is noted throughout the report.

### Variable Air Volume (VAV) Terminals

The VAV's were calibrated in a call for max cooling and the correction factors are reported on the individual asset. While in a call for full cooling, the individual air devices were then balanced within design tolerance. The VAVs were then stroked to minimum cool and the airflow values reported. The VAV was then stroked to heating and the airflow values reported. It was verified that there was a sufficient temp rise on each VAV.

### Outside Air Fan

The OAF provides ventilation air to HVAC units throughout the space. All equipment on the duct system was first turned on in a full fan speed condition. The total airflow was measured via traverse and then adjustment was made to bring the total flow within design tolerance. The individual branches to each unit were then traversed and balanced until they were within design tolerances. Once balancing was completed, the overrides were released

### General Exhaust Fans

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 of design. 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.

### Final Building Tests

After completing the test and balance the final building pressure was measured. It was confirmed that the building pressure fell within acceptable tolerances of  $-0.02''$  wc to  $+0.02''$  wc and that the pressure measurement coincides with the actual and design net airflow. Any deviations from these standards are noted throughout the report.

### 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
FCU-1	BOH	1900	1862	1610	1587	290	275	15.3%	14.8%						
FCU-2	SALES	1400	1263	1095	982	305	281	21.8%	22.2%						
FCU-3	SALES	1400	1502	1095	1215	305	287	21.8%	19.1%						
FCU-4	SALES	1400	1176	1095	868	305	308	21.8%	26.2%						
FCU-5	SOLAR ZONE	1200	870	1200	870	0	0	0.0%	0.0%						
EF-1	RESTROOM													200	216
<b>TOTALS</b>		7300	6673	6095	5522	1205	1151			0	0	0	0	200	216

#### NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	1205	1151
TOTAL EXHAUST	200	216
<b>NET AIRFLOW</b>	<b>1005</b>	<b>935</b>

NOTES:

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Project: 08-29 NIKE LIVE - CARY, NC  
System/Unit: AHU/RTU



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Asset: FCU1

AREA:BOH

Unit Data		
	Design	Actual
MFG	CARRIER	CARRIER
Serial Num	-	4821F11375
Model Num	FV4CNB006	FV4CNB006
Configuration	-	HORIZONTAL
Num OA Filters 1	-	N/A
OA Filter Size 1	-	N/A
Num Final Filter 1	-	1
Final Filter Size 1	-	22X24X1

Motor Data		
	Design	Actual
Motor MFG	-	N/L
Frame	-	N/L
Horsepower	3/4	0.75
Motor Rpm	-	N/L
Phase	3	1
Rated Voltage	480	208/230
Rated Amperage	-	6.8

Drive Data		
	Design	Actual
Num of Belts	-	DD

Test Data		
	Design	Actual
SF CFM	1900	1862
SF RPM	-	DD
RA CFM	1610	1587
OA CFM	290	275
RL Voltage	-	[1]
RL Amperage	-	2.5
SF Rotation	-	CCW

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.175"
Fan Suction SP	-	-0.519"
Fan Discharge SP	-	0.101"
Total ESP	0.65"	0.276"
Fan Total SP	-	0.62"

General		
	Design	Actual
Unit free of Damage	-	YES
Unit Completely Assembled	-	YES
Unit Leveled	-	YES
Controls Complete	-	YES
Unit Filters Clean	-	YES
Evap Coil Clean	-	YES
Condensate Drain Installed	-	YES

Completed By: Brianna Biggs on

Notes: [1] No safe location to take volts. Amps measured with blower door off.

Date: 05/26/2023

# National TAB

Project:08-29 NIKE LIVE - CARY, NC

## AHU/RTU



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### Diffuser Supply (GRD)

#### FCU1/BOH

Asset								
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	IT ROOM	CSD3	10"	250	155	153	226	90.4
SGRD2	RESTROOM	CSD3	6"	75	65	65	68	90.7
SGRD3	FOH PIP	CSD2	8"	100	107	137	108	108.0
SGRD4	COACH'S OFFICE	CSD1	8"	200	181	181	183	91.5
SGRD5	HALLWAY	CSD2	8"	100	91	93	99	99.0
SGRD6	S&R	CSD2	8"	200	186	199	201	100.5
SGRD7	S&R	CSD2	8"	200	192	208	213	106.5
SGRD8	S&R	CSD2	8"	200	187	178	182	91.0
SGRD9	S&R	CSD2	8"	200	209	227	242	121.0
SGRD10	BREAKROOM	CSD1	8"	200	137	141	181	90.5
SGRD11	BREAKROOM	CSD1	8"	175	122	127	159	90.9

Completed By: Brianna Biggs on 08/15/2022

Asset	Notes	Date
SGRD9	DAMPER IS NOT ACCESSIBLE. SLIGHTLY HIGH AIRFLOW NOT ANTICIPATED TO CAUSE ANY ISSUES.	05/26/2023

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Project: 08-29 NIKE LIVE - CARY, NC  
System/Unit: AHU/RTU



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Asset: FCU2

AREA:SALES

Unit Data		
	Design	Actual
MFG	CARRIER	CARRIER
Serial Num	-	4821F11362
Model Num	FV4CNB006	FV4CNB006
Configuration	-	HORIZONTAL
Num OA Filters 1	-	N/A
OA Filter Size 1	-	N/A
Num Final Filter 1	-	1
Final Filter Size 1	-	22X24X1

Test Data		
	Design	Actual
SF CFM	1400	1263
SF RPM	-	DD
RA CFM	1095	982
OA CFM	305	281
RL Voltage	-	[1]
RL Amperage	-	1.8
SF Rotation	-	CCW

Motor Data		
	Design	Actual
Motor MFG	-	N/L
Frame	-	N/L
Horsepower	3/4	0.75
Motor Rpm	-	N/L
Phase	3	1
Rated Voltage	480	230/208
Rated Amperage	-	6.8

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.12"
Fan Suction SP	-	-0.46"
Fan Discharge SP	-	0.11"
Total ESP	0.85"	0.23"
Fan Total SP	-	0.57"

Drive Data		
	Design	Actual
Num of Belts	-	DD

General		
	Design	Actual
Unit free of Damage	-	YES
Unit Completely Assembled	-	YES
Unit Leveled	-	YES
Controls Complete	-	YES
Unit Filters Clean	-	YES
Evap Coil Clean	-	YES
Condensate Drain Installed	-	YES

Completed By: Brianna Biggs on

Notes: [1] No safe location to take volts. Amps measured with blower door off.

Date: 05/26/2023

# National TAB

Project:08-29 NIKE LIVE - CARY, NC

## AHU/RTU



Comfort. Under control.

### Diffuser Supply (GRD)

#### FCU2/SALES

Asset								
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	FOH PIP	CSD2	10"	225	270	270	241	107.1
SGRD2	FOH PIP	CSD2	10"	225	270	303	246	109.3
SGRD3	FOH PIP	CSD2	10"	225	242	347	242	107.6
SGRD4	FOH PIP	CSD2	10"	225	296	296	234	104.0
VAV1	VAV1	-	9"	500	300	300	300	60.0

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Asset	Notes	Date
VAV1	[1] COMFORT CONTROLS SYSTEM [EMS] IS NOT ABLE TO CALIBRATE/CONTROL THIS VAV BOX. EMS IS ONLY ABLE TO VIEW THE DAMPER VOLTAGE. THIS ISSUE WILL NEED TO BE RESOLVED BETWEEN COMFORT CONTROL SYSTEM AND THE MECHANICAL FIELD TECH WHO INSTALLED THE CONTROLS.	08/15/2022

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Project: 08-29 NIKE LIVE - CARY, NC  
System/Unit: AHU/RTU



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Asset: FCU3

AREA:SALES

Unit Data		
	Design	Actual
MFG	CARRIER	CARRIER
Serial Num	-	4821F11361
Model Num	FV4CNB006	FV4CNB006
Configuration	-	HORIZONTAL
Num OA Filters 1	-	N/A
OA Filter Size 1	-	N/A
Num Final Filter 1	-	1
Final Filter Size 1	-	22X24X1

Test Data		
	Design	Actual
SF CFM	1400	1502
SF RPM	-	DD
RA CFM	1095	1215
OA CFM	305	287
RL Voltage	-	[1]
RL Amperage	-	2.7
SF Rotation	-	CCW

Motor Data		
	Design	Actual
Motor MFG	-	N/L
Frame	-	N/L
Horsepower	3/4	0.75
Motor Rpm	-	N/L
Phase	3	1
Rated Voltage	480	208/230
Rated Amperage	-	6.8

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.132"
Fan Suction SP	-	-0.511"
Fan Discharge SP	-	0.14"
Total ESP	0.60"	0.272"
Fan Total SP	-	0.651"

Drive Data		
	Design	Actual
Num of Belts	-	DD

General		
	Design	Actual
Unit free of Damage	-	YES
Unit Completely Assembled	-	YES
Unit Leveled	-	YES
Controls Complete	-	YES
Unit Filters Clean	-	YES
Evap Coil Clean	-	YES
Condensate Drain Installed	-	YES

Completed By: Brianna Biggs on

Notes: [1] No safe location to take volts. Amps measured with blower door off.

Date: 05/26/2023

# National TAB

Project:08-29 NIKE LIVE - CARY, NC

## AHU/RTU



Comfort. Under control.

**Diffuser Supply (GRD)**

**FCU3/SALES**

Asset										
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design
SGRD1	SALES	DSG1	10X6	200	1	236		236	218	109.0
SGRD2	SALES	DSG1	10X6	200	1	236		236	214	107.0
SGRD3	SALES	DSG1	10X6	200	1	225		216	217	108.5
SGRD4	SALES	DSG1	10X6	200	1	237		201	214	107.0
SGRD5	SALES	DSG1	10X6	200	1	199		227	209	104.5
SGRD6	SALES	DSG1	10X6	200	1	192		183	211	105.5
SGRD7	SALES	DSG1	10X6	200	1	287		256	219	109.5

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Project: 08-29 NIKE LIVE - CARY, NC  
System/Unit: AHU/RTU



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Asset: FCU4

AREA: SALES

Unit Data		
	Design	Actual
MFG	CARRIER	CARRIER
Serial Num	-	4821F11378
Model Num	FV4CNB006	FV4CNB006
Configuration	-	HORIZONTAL
Num Final Filter 1	-	1
Final Filter Size 1	-	22X24X1

Motor Data		
	Design	Actual
Motor MFG	-	N/L
Frame	-	N/L
Horsepower	3/4	.75
Motor Rpm	-	N/L
Phase	3	1
Rated Voltage	480	208/230
Rated Amperage	-	6.8

Drive Data		
	Design	Actual
Num of Belts	-	DD

Test Data		
	Design	Actual
SF CFM	1400	1176
SF RPM	-	DD
RA CFM	1095	868
OA CFM	305	308
RL Voltage	-	[1]
RL Amperage	-	1.8
SF Rotation	-	CCW

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.12"
Fan Suction SP	-	-0.284"
Fan Discharge SP	-	0.11"
Total ESP	0.65"	0.23"
Fan Total SP	-	0.394"

General		
	Design	Actual
Unit free of Damage	-	YES
Unit Completely Assembled	-	YES
Unit Leveled	-	YES
Controls Complete	-	YES
Unit Filters Clean	-	YES
Evap Coil Clean	-	YES
Condensate Drain Installed	-	YES

Completed By: Brianna Biggs on

Notes: [1] No safe location to take volts. Amps measured with blower door off.

Date: 05/26/2023

# National TAB

Project:08-29 NIKE LIVE - CARY, NC

## AHU/RTU



Comfort. Under control.

### Diffuser Supply (GRD)

#### FCU4/SALES

Asset										
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design
SGRD1	SALES	DSG1	10X6	200	1	-	-	-	270	135.0
SGRD2	SALES	DSG1	10X6	200	1	-	-	-		-
SGRD3	SALES	DSG1	10X6	200	1	153	153	153	153	76.5
SGRD4	SALES	DSG1	10X6	200	1	169	169	169	169	84.5
SGRD5	SALES	DSG1	10X6	200	1	200	200	200	200	100.0
SGRD6	SALES	DSG1	10X6	200	1	188	188	188	188	94.0
SGRD7	SALES	DSG1	10X6	200	1	196	196	196	196	98.0

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Asset	Notes	Date
SGRD1	SGRD1 CANNOT PHYSICALLY BE ACCESSED IN STORE SPACE TO BE READ. TOTAL AIRFLOW BETWEEN DIFFUSERS 1 AND 2 IS 270 CFM.	05/26/2023
SGRD2	SGRD2 CANNOT BE PHYSICALLY ACCESSED IN THE STORE TO READ	08/15/2022

# National TAB

Project: 08-29 NIKE LIVE - CARY, NC  
System/Unit: AHU/RTU



Comfort. Under control.

Asset: FCU5

AREA: SOLAR ZONE

Unit Data		
	Design	Actual
MFG	CARRIER	CARRIER
Serial Num	-	5221F46291
Model Num	FV4CNB003	FV4CNF003
Configuration	-	HORIZONTAL
Num OA Filters 1	-	N/A
OA Filter Size 1	-	N/A
Num Final Filter 1	-	1
Final Filter Size 1	-	20x22x1

Test Data		
	Design	Actual
SF CFM	1200	870
SF RPM	-	DD
RA CFM	1200	870
OA CFM	-	-
RL Voltage	-	[2]
RL Amperage	-	0.14
SF Rotation	-	CCW
Min OA Damper Position	-	[3]

Motor Data		
	Design	Actual
Motor MFG	-	N/L
Frame	-	N/L
Horsepower	1/2	0.50
Motor Rpm	-	N/L
Phase	3	1
Rated Voltage	480	208/230
Rated Amperage	-	4.3

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.05"
Fan Suction SP	-	-0.191"
Fan Discharge SP	-	0.017"
Total ESP	0.65"	0.067"
Fan Total SP	-	0.208"

Drive Data		
	Design	Actual
Num of Belts	-	DD

General		
	Design	Actual
Unit free of Damage	-	YES
Unit Completely Assembled	-	YES
Unit Leveled	-	YES
Controls Complete	-	YES
Unit Filters Clean	-	YES
Evap Coil Clean	-	YES
Condensate Drain Installed	-	YRS

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Notes: [1] MOTOR IS SET TO MAXIMUM SPEED. CALLED CARRIER TECHNICAL SUPPORT TO CONFIRM. UNABLE TO INCREASE AIRFLOW FURTHER. // [2] NO SAFE PLACE TO TAKE VOLTS. AMPS TAKEN WITH BLOWER DOOR OFF.

Date: 05/26/2023

# National TAB

Project:08-29 NIKE LIVE - CARY, NC

## AHU/RTU



Comfort. Under control.

**Diffuser Supply (GRD)**

**FCU5/SOLAR ZONE**

Asset										
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design
SGRD1	WELCOM E	DSG1	14X6	300	1	217	300	217	217	72.3
SGRD2	WELCOM E	DSG1	14X6	300	1	217	3	217	217	72.3
SGRD3	WELCOM E	DSG1	14X6	300	1	218		218	218	72.7
SGRD4	WELCOM E	DSG1	14X6	300	1	218		218	218	72.7

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# National TAB

Project: 08-29 NIKE LIVE - CARY, NC  
System/Unit: FAN - Exhaust



Comfort. Under control.

Asset: EF1

AREA:RESTROOM

Unit Data		
	Design	Actual
<b>MFG</b>	GREENHECK	GREENHECK
<b>Model Num</b>	SQ-080-VG	SQ-080-VG
<b>Serial Num</b>	-	N/A
<b>Type</b>	INLINE	INLINE
<b>Configuration</b>	HORIZONTAL	HORIZONTAL

Test Data		
	Design	Actual
<b>CFM</b>	200	216

Motor Data		
	Design	Actual

Drive Data		
	Design	Actual

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Notes: [1] unable to access fan due to height and placement of fan above ceiling grid.

Date: 04/27/2023

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Project:08-29 NIKE LIVE - CARY, NC

## FAN - Exhaust



Comfort. Under control.

**Diffuser Ret/Exh (GRD)**

**EF1/RESTROOM**

Asset												
Asset Name	Model Num	MFG	Type	Size	DESIGN CFM	AK	VEL(1)	CFM(1)	VEL(2)	CFM(2)	FINAL CFM	% to design
EGRD1	NA	RETURN	CEG1	6"	75	1		0	0	0	82	109.3
EGRD2	NA	RETURN	CEG1	8"	125	1		98	98	98	134	107.2

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Project: 08-29 NIKE LIVE - CARY, NC  
System/Unit: FAN - Supply



Comfort. Under control.

Asset: SF1

AREA:FCU1-4

Unit Data		
	Design	Actual
MFG	GREENHECK	GREENHECK
Model Num	SQ-120-VG	SQ-120-VG
Serial Num	-	N/L
Type	INLINE	INLINE
Configuration	HORIZONTAL	HORIZONTAL

Motor Data		
	Design	Actual
Motor MFG	-	N/A
Frame	-	N/A
Horsepower	1/2	N/A
Motor Rpm	-	N/A
Phase	1	N/A
Voltage (rated)	120	N/A
Amperage (rated)	-	N/A
Service Factor	-	N/A

Drive Data		
	Design	Actual

Test Data		
	Design	Actual
CFM	1205	1151
SF RPM	1602	DD
Motor RPM	-	DD
SF System SetPt	-	7.2V
RL Voltage	-	[1]
RL Amperage	-	[1]
Total ESP	-	0.137"
Fan Inlet SP	-	-0.137"

Chilled Water Coil		
	Design	Actual

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Notes: [1] NO ACCESS TO SAFELY READ AMPS/VOLTS. // [2] LOW SPEED = 658 CFM

Date: 05/26/2023

1 HVAC PLAN  
3/16" = 1'-0"

2 ENLARGED BACK OF HOUSE HVAC PLAN  
1/4" = 1'-0"

