Nike

2000 E Rio Salado Pkwy, Ste 1253
Tempe, AZ 85281

Submission of

Certified Test, Adjust and Balance Report

February 16, 2024

Owner:	NIKE, Inc. One Bowerman Dr, Beaverton, OR 97005
Architect:	MBH 960 Atlantic Ave, Alameda, CA 94501
Engineer:	Henderson Engineers 8345 Lenexa Dr, Ste 300, Lenexa, KS 66214
General Contractor:	Not Provided
Mechanical Contractor:	Not Provided
TAB Management:	National TAB 9471 Sutton Place, Hamilton, OH 45011
NEBB Certified TAB Firm:	United Test & Balance, Inc. 7013 Flagler Rd, Nordland, WA 98358
NEBB Certification Number:	3753

Report Certification

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

Certification

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 Standard for Testing, Adjusting and Balancing of Environmental Systems. The measurements shown, and the information given, in this report are certified to be accurate and complete, at the time and date information was gathered. Any variances from design quantities, which exceed NEBB tolerances, are noted in the TAB report project summary.

Submitted & Certified By

Firm Name

United Test & Balance, Inc.

NEBB Certification Number

3753

Expiration Date

12/31/2024

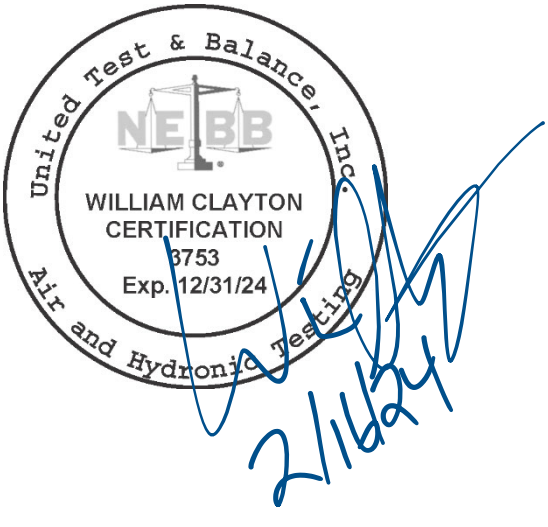
Certification Date

February 16, 2024

Signed & Sealed By

Certifying NEBB Certified TAB Professional

William Clayton



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LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

Report Summary/Remarks

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

Scope of Work

Includes

The Test and Balance (TAB) scope of work consist of 1 Dedicated Outdoor Air System (DOAS), 6 Rooftop Units (RTU), 3 Exhaust Fans (EF), and the associated inlets/outlets.

System Posturing & Remarks

Air Apparatus

The RTUs and DOAS were set for design airflow and the associated supply outlets were balanced in full cooling demand. After the distribution systems were complete, the outside air value was measured and set. The Outside Air CFM was directly measured as noted. The Return Air CFM was derived from subtracting Outside Air CFM from Total Supply Air CFM. There was no access to the unit discharge in order to obtain a duct traverse. Total CFM was derived by the sum of the Outlet measurements. All final TAB settings and performance measurements were completed and data was recorded on to the appropriate test report forms.

Exhaust Fans

The exhaust fans were energized, measured and set for total airflow. The associated inlets were balanced as noted in this report. Total CFM was derived as noted on the individual test pages. Final settings and performance measurements were completed and data recorded on to the appropriate test report forms.

General Remarks

Remark 1

The majority of the ductwork on the project is fabric duct. The units were set for total airflow and the duct was adjusted to ensure equal inflation among the branches.

Comment Log

The following page lists all project comments and issues. All items described and listed on the following Equipment Comment Log have been previously forwarded for resolution and have been accepted as reported.

Equipment Comment Log

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

Page #s	System / Unit Name	Notes / Logs
Page 12	RTU-02	Unit was measured at 125% of design on low speed. No further action recommended.
Page 15	RTU-03	Unit was measured at 125% of design on low speed. No further action recommended.
Page 28	EF-01	Fan is operating at 68% of design on high speed. Recommend sealing bottom of fan to chase better.
Page 33	EF-03	Fan is operating at 80% of design on high speed. Recommend sealing bottom of fan to chase better.

Air Apparatus

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: DOAS-01

Tested By: William Clayton
Date: 2/16/2024

Design Airflow (CFM)	
Design Total	3200
Design Grille Total	3200
Design Return	0
Design Min O/A	3200

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	-
Submittal Airflow	Not Provided
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	Not Listed
Submittal BHP	Not Provided
Filter MERV Rating (Sched/Sub)	13

Design Static Pressures (in wg)	
Design Ext SP	1.5
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	-

Filter Data	
Condition	Partially Loaded
Filter Type	Pleated
MERV Rating	8
Filter Size Set 1 (in)	20x25x2
# Filters Set 1	8
Filter Size Set 2 (in)	-
# Filters Set 2	-

Motor Nameplate Data	
Motor Make	Westinghouse
Motor Frame	213T
Motor HP	3.00
Motor RPM	1175
Motor Volts	230
Motor Phase	3

Final Airflow (CFM)	
Actual Total CFM	3260
Actual Grille Total CFM	Not Applicable
Actual Return Air CFM	0
Actual Min O/A CFM	3260
Fan CFM Test Method	Face Velocity / Velgrid
OA Method/Instrument	Face Velocity / Velgrid
OA Ak (sq ft)	-
OA Damper Position	100% Open
RA Damper Position	Closed

Unit Data	
Make (tag)	CaptiveAire
Model # (tag)	CASRTU3-20-15T
Serial # (tag)	5575689
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	12.3
Clg Coil Vel (FPM)	265
Fan Service	Supply
Fan Type	Centrifugal (BI)
Fan Discharge	Downblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	-

Fan Data	
Actual Fan RPM/Speed	100%
Actual Motor RPM	Not Accessible

Electrical Data	
Measurement Method	VFD Display
Motor Volts 1	297
Motor Volts 2	-

Air Apparatus

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: DOAS-01

Tested By: William Clayton
Date: 2/16/2024

Motor Nameplate Data	
Motor Amps	9.2
Motor S.F.	1.15
Motor % PF	.
Motor % Eff.	88.5
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in)	-
VP Range	-
Center Distance (in)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Electrical Data	
Motor Volts 3	-
Motor Amps 1	9.4
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	73.00
Approx. BHP	4.0
Corr. Nameplate Amps	7.1
Starter Data	Not Applicable
VFD Reference	Not Applicable

Make (tag) Photo:

Name: image_123650291 (1).JPG
Captured: 2/16/2024 2:53 PM
Caption:

Air Apparatus

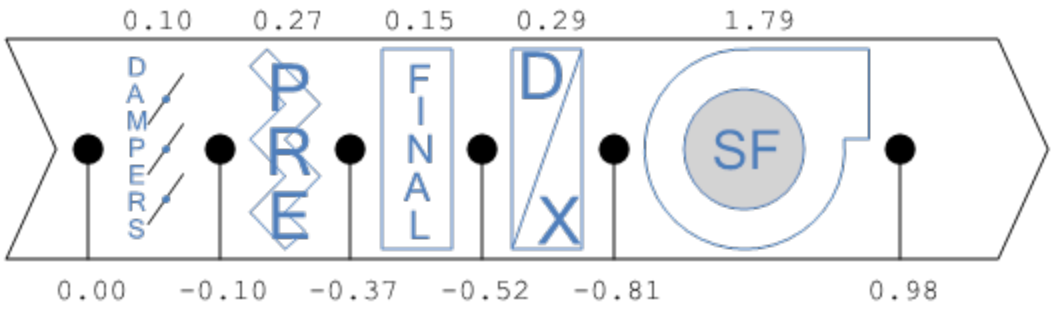
PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: DOAS-01/Static Profile

Tested By: William Clayton
Date: 2/16/2024

Static Pressure Profile



DOAS-01 Supply Outlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
S-01	200 Stock RM	RND	8	325	-	-		See G.R. #1	-	-	
S-02	100 Sales	RND	14	1440	-	-		-	-	-	
S-03	100 Sales	RND	14	1435	-	-		-	-	-	
	Totals:	**-**	**-**	**3200**	**0**	**0**	**0**	**-**	**-**	**-**	**-**

Air Apparatus

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-01

Tested By: Hank Wulk
Date: 1/24/2024

Design Airflow (CFM)	
Design Total	1750
Design Grille Total	1750
Design Return	1610
Design Min O/A	140

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	-
Submittal Airflow	Not Provided
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	Not Listed
Submittal BHP	Not Provided
Filter MERV Rating (Sched/Sub)	13

Design Static Pressures (in wg)	
Design Ext SP	.5
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	-

Filter Data	
Condition	Partially Loaded
Filter Type	Pleated
MERV Rating	8
Filter Size Set 1 (in)	16/25/2
# Filters Set 1	4
Filter Size Set 2 (in)	-
# Filters Set 2	-

Motor Nameplate Data	
Motor Make	Broad-Ocean
Motor Frame	Not Listed
Motor HP	1.50
Motor RPM	1500
Motor Volts	230
Motor Phase	1

Final Airflow (CFM)	
Actual Total CFM	1830
Actual Grille Total CFM	1830
Actual Return Air CFM	1693
Actual Min O/A CFM	137
Fan CFM Test Method	Supply Outlet Total
OA Method/Instrument	Face Velocity/RVA
OA Ak (sq ft)	4.280
OA Damper Position	25% Open
RA Damper Position	75% Open

Unit Data	
Make (tag)	Trane
Model # (tag)	WSC060H3R0A29
Serial # (tag)	22461459L
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	11.1
Clg Coil Vel (FPM)	165
Fan Service	Supply
Fan Type	Centrifugal (FC)
Fan Discharge	Downblast
Fan Arrangement	DWDI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	-

Fan Data	
Actual Fan RPM/Speed	Medium
Actual Motor RPM	Not Accessible

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	214
Motor Volts 2	214

Air Apparatus

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-01

Tested By: Hank Wulk
Date: 1/24/2024

Motor Nameplate Data	
Motor Amps	8.2
Motor S.F.	-
Motor % PF	-
Motor % Eff.	-
Other Motor Data	-

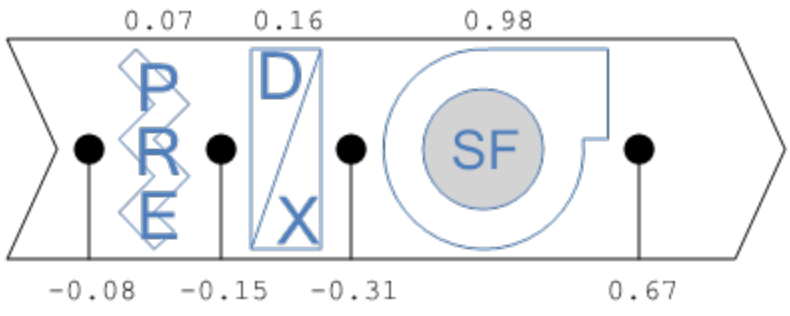
Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in)	-
VP Range	-
Center Distance (in)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Electrical Data	
Motor Volts 3	215
Motor Amps 1	5.8
Motor Amps 2	5.8
Motor Amps 3	5.8
Operating HZ	60.00
Approx. BHP	1.0
Corr. Nameplate Amps	8.8
Starter Data	Not Applicable
VFD Reference	Not Applicable

SYSTEM/UNIT: RTU-01/Static Profile

Tested By: Hank Wulk
Date: 1/24/2024

Static Pressure Profile



Air Apparatus

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

RTU-01 Supply Outlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
S-01	?Office	CD	10	275	378	280	102	Capture Hood	1.000	1.000	280
S-02	310 HC Office	CD	8	150	82	160	107	Capture Hood	1.000	1.000	160
S-03	Back of House	CD	10	230	531	241	105	Capture Hood	1.000	1.000	241
S-04	Back of House	CD	10	235	375	245	104	Capture Hood	1.000	1.000	245
S-05	Back of House	CD	10	230	454	238	103	Capture Hood	1.000	1.000	238
S-06	Back of House	CD	10	230	372	240	104	Capture Hood	1.000	1.000	240
S-07	410 Mens RR	CD	6	75	85	81	108	Capture Hood	1.000	1.000	81
S-08	170 RR Corr	CD	8	250	156	264	106	Capture Hood	1.000	1.000	264
S-09	420 Womens RR	CD	6	75	102	81	108	Capture Hood	1.000	1.000	81
	Totals:	-	-	**1750**	**2535**	**1830**	**105**	-	-	-	-

Air Apparatus

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-02

Tested By: Hank Wulk
Date: 2/14/2024

Design Airflow (CFM)	
Design Total	1750
Design Grille Total	1750
Design Return	1750
Design Min O/A	0

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	-
Submittal Airflow	Not Provided
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	Not Listed
Submittal BHP	Not Provided
Filter MERV Rating (Sched/Sub)	13

Design Static Pressures (in wg)	
Design Ext SP	.5
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	-

Filter Data	
Condition	Partially Loaded
Filter Type	Pleated
MERV Rating	8
Filter Size Set 1 (in)	20/20/2
# Filters Set 1	4
Filter Size Set 2 (in)	-
# Filters Set 2	-

Motor Nameplate Data	
Motor Make	Broad-Ocean
Motor Frame	.
Motor HP	1.50
Motor RPM	1500
Motor Volts	230
Motor Phase	1

Final Airflow (CFM)	
Actual Total CFM	2077
Actual Grille Total CFM	Not Applicable
Actual Return Air CFM	2077
Actual Min O/A CFM	0
Fan CFM Test Method	Coil Face - Velgrid/ADM
OA Method/Instrument	Not Applicable
OA Ak (sq ft)	Not Applicable
OA Damper Position	Closed
RA Damper Position	100% Open

Unit Data	
Make (tag)	Trane
Model # (tag)	WSCO48h3ROA29
Serial # (tag)	230412498l
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	8.3
Clg Coil Vel (FPM)	250
Fan Service	Supply
Fan Type	Centrifugal (FC)
Fan Discharge	Downblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	-

Fan Data	
Actual Fan RPM/Speed	Low
Actual Motor RPM	Not Accessible

Electrical Data	
Measurement Method	Not Accessible
Motor Volts 1	214
Motor Volts 2	214

Air Apparatus

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-02

Tested By: Hank Wulk
Date: 2/14/2024

Motor Nameplate Data	
Motor Amps	8.2
Motor S.F.	.
Motor % PF	.
Motor % Eff.	.
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	.
Fan Sheave Make	.
Fan Shv Mod# or Size (in)	.
Fan Sheave Bore (in)	.
Motor Sheave Make	.
Mtr Shv Mod# or Size (in)	.
Motor Sheave Bore (in)	.
VP Range	.
Center Distance (in)	.
No of Belts	.
Belt Make	.
Belt Size	.
Other Data	.

Electrical Data	
Motor Volts 3	216
Motor Amps 1	4.2
Motor Amps 2	4.0
Motor Amps 3	4.4
Operating HZ	60.00
Approx. BHP	0.7
Corr. Nameplate Amps	8.8
Starter Data	Not Applicable
VFD Reference	Not Applicable

Motor Make Photo:

Name: Motor Make.jpg
Captured: 1/24/2024 11:06 AM
Caption:

SYSTEM/UNIT: RTU-02

Tested By: Hank Wulk
Date: 2/14/2024

Make (tag) Photo:

Name: Make (tag).jpg
Captured: 1/24/2024 11:03 AM
Caption:

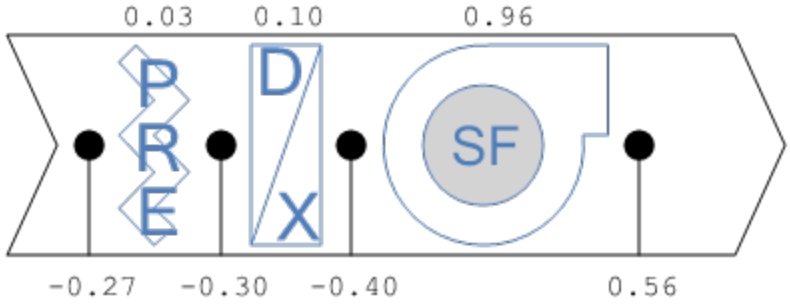
Log:

RTU-02	Unit was measured at 125% of design on low speed. No further action recommended.

SYSTEM/UNIT: RTU-02/Static Profile

Tested By: Hank Wulk
Date: 2/14/2024

Static Pressure Profile



RTU-02 Supply Outlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
S-01	200 Stockroom	RND	14	1500	-	-		See G.R. #1	-	-	
S-02	340 IT EQ RM	CD	10	250	248	248	99	Capture Hood	1.000	1.000	248
	Totals:	-	-	**1750**	**248**	**248**	**14**	-	-	-	-

Air Apparatus

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-03

Tested By: Hank Wulk
Date: 1/24/2024

Design Airflow (CFM)	
Design Total	1400
Design Grille Total	1400
Design Return	1400
Design Min O/A	0

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	-
Submittal Airflow	Not Provided
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	Not Listed
Submittal BHP	Not Provided
Filter MERV Rating (Sched/Sub)	13

Design Static Pressures (in wg)	
Design Ext SP	.5
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	-

Filter Data	
Condition	Partially Loaded
Filter Type	Pleated
MERV Rating	8
Filter Size Set 1 (in)	20/20/2
# Filters Set 1	4
Filter Size Set 2 (in)	-
# Filters Set 2	-

Motor Nameplate Data	
Motor Make	US Motors
Motor Frame	-
Motor HP	1.00
Motor RPM	Not Listed
Motor Volts	208
Motor Phase	1

Final Airflow (CFM)	
Actual Total CFM	1744
Actual Grille Total CFM	1744
Actual Return Air CFM	1744
Actual Min O/A CFM	0
Fan CFM Test Method	Coil Face - Velgrid/ADM
OA Method/Instrument	Not Applicable
OA Ak (sq ft)	Not Applicable
OA Damper Position	Not Applicable
RA Damper Position	100% Open

Unit Data	
Make (tag)	Trane
Model # (tag)	WSC048H3R8A28P8E1A1A60007A000
Serial # (tag)	230412528L
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	8.4
Clg Coil Vel (FPM)	208
Fan Service	Supply
Fan Type	Centrifugal (FC)
Fan Discharge	Downblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	-

Fan Data	
Actual Fan RPM/Speed	Low
Actual Motor RPM	Not Accessible

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	213
Motor Volts 2	214

Air Apparatus

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-03

Tested By: Hank Wulk
Date: 1/24/2024

Motor Nameplate Data	
Motor Amps	6.9
Motor S.F.	-
Motor % PF	-
Motor % Eff.	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in)	-
VP Range	-
Center Distance (in)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Electrical Data	
Motor Volts 3	215
Motor Amps 1	3.0
Motor Amps 2	2.9
Motor Amps 3	3.1
Operating HZ	60.00
Approx. BHP	0.4
Corr. Nameplate Amps	6.7
Starter Data	Not Applicable
VFD Reference	Not Applicable

Motor Make Photo:

Name: US MOTORS.jpg
Captured: 1/24/2024 12:01 PM
Caption:

SYSTEM/UNIT: RTU-03

Tested By: Hank Wulk
Date: 1/24/2024

Make (tag) Photo:

Name: Make (tag).jpg
Captured: 1/24/2024 11:56 AM
Caption:

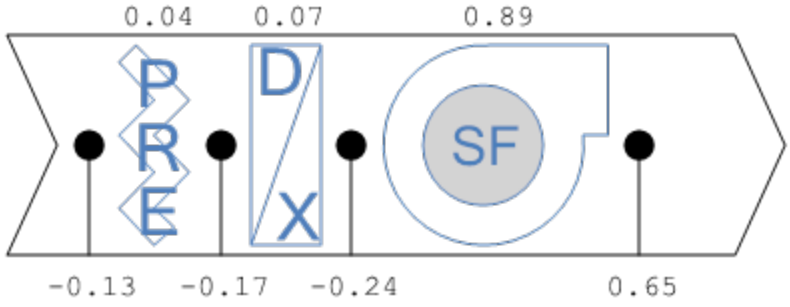
Log:

RTU-03	Unit was measured at 125% of design on low speed. No further action recommended.

SYSTEM/UNIT: RTU-03/Static Profile

Tested By: Hank Wulk
Date: 1/24/2024

Static Pressure Profile



RTU-03 Supply Outlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
S-01	Sales Floor	RND	14	1400	-	-		See G.R. #1	-	-	
	Totals:	**-**	**-**	**1400**	**0**	**0**	**0**	**-**	**-**	**-**	**-**

Air Apparatus

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-04

Tested By: Hank Wulk
Date: 2/14/2024

Design Airflow (CFM)	
Design Total	1400
Design Grille Total	1400
Design Return	1400
Design Min O/A	0

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	-
Submittal Airflow	Not Provided
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	Not Listed
Submittal BHP	Not Provided
Filter MERV Rating (Sched/Sub)	13

Design Static Pressures (in wg)	
Design Ext SP	.5
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	-

Filter Data	
Condition	Partially Loaded
Filter Type	Pleated
MERV Rating	8
Filter Size Set 1 (in)	20/20/2
# Filters Set 1	4
Filter Size Set 2 (in)	-
# Filters Set 2	-

Motor Nameplate Data	
Motor Make	No Access - Embedded Motor
Motor Frame	Not Listed
Motor HP	1.00
Motor RPM	Not Listed
Motor Volts	208
Motor Phase	3

Final Airflow (CFM)	
Actual Total CFM	1492
Actual Grille Total CFM	Not Applicable
Actual Return Air CFM	1492
Actual Min O/A CFM	0
Fan CFM Test Method	Coil Face - Velgrid/ADM
OA Method/Instrument	Not Applicable
OA Ak (sq ft)	Not Applicable
OA Damper Position	Closed
RA Damper Position	100% Open

Unit Data	
Make (tag)	Trane
Model # (tag)	wsc048h3roa29poe1a1a6000 7a000f
Serial # (tag)	230412516l
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	8.4
Clg Coil Vel (FPM)	178
Fan Service	Supply
Fan Type	Centrifugal (FC)
Fan Discharge	Downblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	-

Fan Data	
Actual Fan RPM/Speed	Low
Actual Motor RPM	Not Accessible

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	214
Motor Volts 2	216

Air Apparatus

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-04

Tested By: Hank Wulk
Date: 2/14/2024

Motor Nameplate Data	
Motor Amps	6.9
Motor S.F.	-
Motor % PF	-;
Motor % Eff.	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in)	-
VP Range	-
Center Distance (in)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Electrical Data	
Motor Volts 3	214
Motor Amps 1	2.9
Motor Amps 2	2.9
Motor Amps 3	2.9
Operating HZ	60.00
Approx. BHP	0.4
Corr. Nameplate Amps	6.7
Starter Data	Not Applicable
VFD Reference	Not Applicable

Make (tag) Photo:

Name: Make (tag).jpg
Captured: 1/23/2024 2:56 PM
Caption:

Air Apparatus

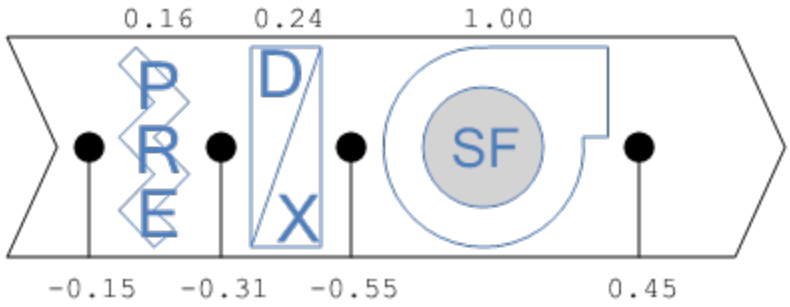
PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-04/Static Profile

Tested By: William Clayton
Date: 2/16/2024

Static Pressure Profile



RTU-04 Supply Outlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
S-01	Sales Floor	RND	8	555	-	-		-	-	-	
S-02	Sales Floor	RND	10	845	-	-		-	-	-	
	Totals:	**-**	**-**	**1400**	**0**	**0**	**0**	**-**	**-**	**-**	**-**

Air Apparatus

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-05

Tested By: Hank Wulk
Date: 1/24/2024

Design Airflow (CFM)	
Design Total	4850
Design Grille Total	4850
Design Return	4850
Design Min O/A	0

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	-
Submittal Airflow	Not Provided
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	Not Listed
Submittal BHP	Not Provided
Filter MERV Rating (Sched/Sub)	13

Design Static Pressures (in wg)	
Design Ext SP	.9
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	-

Filter Data	
Condition	Partially Loaded
Filter Type	Pleated
MERV Rating	8
Filter Size Set 1 (in)	20/24/2
# Filters Set 1	8
Filter Size Set 2 (in)	-
# Filters Set 2	-

Motor Nameplate Data	
Motor Make	No Access - Embedded Motor
Motor Frame	.
Motor HP	3.00
Motor RPM	980
Motor Volts	208
Motor Phase	3

Final Airflow (CFM)	
Actual Total CFM	4847
Actual Grille Total CFM	4847
Actual Return Air CFM	4847
Actual Min O/A CFM	0
Fan CFM Test Method	Coil Face - Velgrid/ADM
OA Method/Instrument	Not Applicable
OA Ak (sq ft)	Not Applicable
OA Damper Position	Closed
RA Damper Position	100% Open

Unit Data	
Make (tag)	Trane
Model # (tag)	WSJ1I0A3S0002H0C0A10004 0000000
Serial # (tag)	231911087D
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	25.1
Clg Coil Vel (FPM)	193
Fan Service	Supply
Fan Type	Centrifugal (FC)
Fan Discharge	Downblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	-

Fan Data	
Actual Fan RPM/Speed	962
Actual Motor RPM	Not Accessible

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	232
Motor Volts 2	216

Air Apparatus

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-05

Tested By: Hank Wulk
Date: 1/24/2024

Motor Nameplate Data	
Motor Amps	8.8
Motor S.F.	-
Motor % PF	-
Motor % Eff.	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in)	-
Motor Sheave Make	.
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in)	-
VP Range	-
Center Distance (in)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	2 fans

Electrical Data	
Motor Volts 3	214
Motor Amps 1	1.8
Motor Amps 2	1.4
Motor Amps 3	1.3
Operating HZ	60.00
Approx. BHP	0.7
Corr. Nameplate Amps	7.9
Starter Data	Not Applicable
VFD Reference	Not Applicable

Make (tag) Photo:

Name: Make (tag).jpg
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Caption:

Air Apparatus

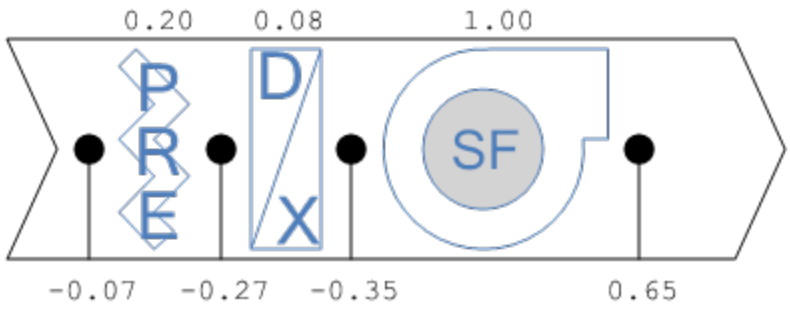
PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-05/Static Profile

Tested By: Hank Wulk
Date: 1/24/2024

Static Pressure Profile



RTU-05 Supply Outlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
S-01	Sales Floor	RND	8	450	-	-		See G.R. #1	-	-	
S-02	Sales Floor	RND	8	450	-	-		-	-	-	
S-03	Sales Floor	RND	10	850	-	-		-	-	-	
S-04	Sales Floor	RND	10	850	-	-		-	-	-	
S-05	Sales Floor	RND	10	850	-	-		-	-	-	
S-06	Sales Floor	RND	10	850	-	-		-	-	-	
	Totals:	-	-	**4300**	**0**	**0**	**0**	-	-	-	-

Air Apparatus

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-05/VAV-01

Tested By: Hank Wulk
Date: 1/24/2024

Design Airflow (CFM)	
Design Prim. Max (Sched/Sub)	550
Design Prim. Min. (Sched/Sub)	165
Design Prim. Heat (Sched/Sub)	Not Applicable
Design Fan (Sched/Sub)	Not Applicable

Final Airflow (CFM)	
Actual Prim. Max CFM	521

Box Data	
Box Type	VAV
Motor/Fan Type	Not Applicable
Coil Description	Not Applicable
DDC Address	Not DDC
Inlet Size (in.) (Sched/Sub)	10

RTU-05/VAV-01 Supply Outlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
S-01	150 Acc Fit RM	CD	6	100	200	95	95	Capture Hood	1.000	1.000	95
S-02	140 Fit RM	CD	6	75	120	77	103	Capture Hood	1.000	1.000	77
S-03	110 Fitt RM Vest	CD	6	100	157	92	92	Capture Hood	1.000	1.000	92
S-04	130 FIt RM	CD	6	75	187	70	93	Capture Hood	1.000	1.000	70
S-05	110 Fitt RM Vest	CD	6	100	92	92	92	Capture Hood	1.000	1.000	92
S-06	120 Fit Return	CD	6	100	206	95	95	Capture Hood	1.000	1.000	95
	Totals:	-	-	**550**	**962**	**521**	**95**	-	-	-	-

Air Apparatus

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-06

Tested By: Hank Wulk
Date: 1/23/2024

Design Airflow (CFM)	
Design Total	3850
Design Grille Total	3850
Design Return	3850
Design Min O/A	0

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	-
Submittal Airflow	Not Provided
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	Not Listed
Submittal BHP	Not Provided
Filter MERV Rating (Sched/Sub)	13

Design Static Pressures (in wg)	
Design Ext SP	.6
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	-

Filter Data	
Condition	Partially Loaded
Filter Type	Pleated
MERV Rating	8
Filter Size Set 1 (in)	25/20/2
# Filters Set 1	4
Filter Size Set 2 (in)	-
# Filters Set 2	-

Motor Nameplate Data	
Motor Make	No Access - Embedded Motor
Motor Frame	-
Motor HP	2.75
Motor RPM	Not Listed
Motor Volts	208
Motor Phase	3

Final Airflow (CFM)	
Actual Total CFM	3844
Actual Grille Total CFM	Not Applicable
Actual Return Air CFM	3844
Actual Min O/A CFM	0
Fan CFM Test Method	Coil Face - Velgrid/ADM
OA Method/Instrument	Not Applicable
OA Ak (sq ft)	Not Applicable
OA Damper Position	Closed
RA Damper Position	100% Open

Unit Data	
Make (tag)	Trane
Model # (tag)	WSC120H3R0B29
Serial # (tag)	230311073L
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	12.1
Clg Coil Vel (FPM)	318
Fan Service	Supply
Fan Type	Centrifugal (FC)
Fan Discharge	Downblast
Fan Arrangement	DWDI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	-

Fan Data	
Actual Fan RPM/Speed	Medium
Actual Motor RPM	Not Accessible

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	218
Motor Volts 2	216

Air Apparatus

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-06

Tested By: Hank Wulk
Date: 1/23/2024

Motor Nameplate Data	
Motor Amps	-
Motor S.F.	-
Motor % PF	-
Motor % Eff.	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in)	-
VP Range	-
Center Distance (in)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Electrical Data	
Motor Volts 3	216
Motor Amps 1	4.6
Motor Amps 2	4.5
Motor Amps 3	4.4
Operating HZ	60.00
Approx. BHP	
Corr. Nameplate Amps	
Starter Data	Not Applicable
VFD Reference	Not Applicable

Make (tag) Photo:

Name: Make (tag).jpg
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Caption:

Air Apparatus

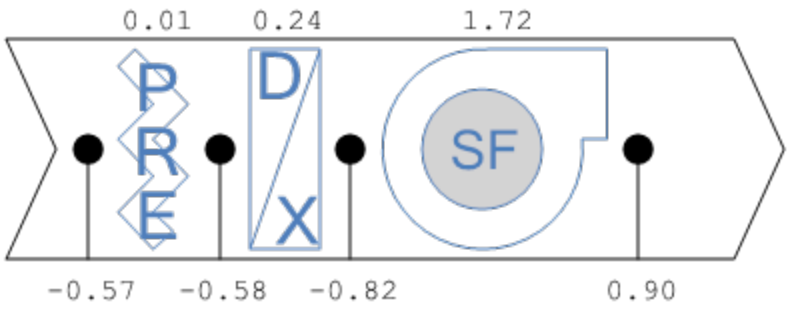
PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-06/Static Profile

Tested By: Hank Wulk
Date: 2/14/2024

Static Pressure Profile



Fan

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: EF-01

Design Airflow (CFM)	
Design Airflow	325
Design Grille Airflow	325

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	Not Provided
Submittal Airflow	Not Provided
Sched./Sub. Volts	120
Sched./Sub. Phase	1
Sched./Sub. HP	1/10
Submittal BHP	Not Provided

Design Static Pressures (in wg)	
Design External SP	.5
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	BroadOcean
Motor Frame (tag)	Not Listed
Motor HP (tag)	1/10
Motor RPM (tag)	1800
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	1.38
Motor S.F. (tag)	Not Listed
Mtr % PF (tag)	-
Mtr % Eff. (tag)	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-

Final Airflow (CFM)	
Actual Airflow	220
Actual Grille Airflow	220
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	-

Unit Data	
Make (tag)	Greenheck
Model # (tag)	G-080-VG-1-17-X
Serial # (tag)	21818572
Unit Location	Roof
Unit Discharge	Downblast
Fan Service	Exhaust
Fan Type	Centrifugal (BI)
Fan Discharge	Horizontal
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	Not Provided

Fan Data	
Actual Fan RPM/Speed	Single Speed
Actual Motor RPM	Not Accessible
Speed Cont. Position	10

Electrical Data	
Measurement Method	Not Accessible
Motor Volts 1	-
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	-
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Not Applicable
Approx. BHP	
Corr. Nameplate Amps	

Fan

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: EF-01

Drive Data	
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Make (tag) Photo:

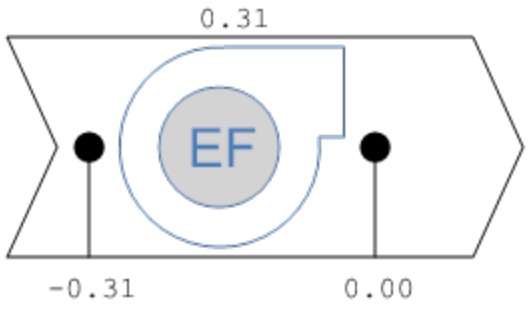
Name: EF-01 Tag.jpg
Captured: 2/16/2024 2:54 PM
Caption:

Log: EF-01 Fan is operating at 68% of design on high speed. Recommend sealing bottom of fan to chase better.

SYSTEM/UNIT: EF-01/Static Profile

Tested By: Hank Wulk
Date: 1/24/2024

Static Pressure Profile



Fan

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

EF-01 Exhaust Inlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
E-01	430 Jan Closet	CD	6	75	40	40	53	Capture Hood	1.000	1.000	40
E-02	420 Womens RR	CD	6	125	90	90	72	Capture Hood	1.000	1.000	90
E-03	410 Mens RR	CD	15	125	90	90	72	Capture Hood	1.000	1.000	90
	Totals:	-	-	**325**	**220**	**220**	**68**	-	-	-	-

Fan

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: EF-02

Tested By: Hank Wulk
Date: 1/24/2024

Design Airflow (CFM)	
Design Airflow	1000
Design Grille Airflow	1000

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	Not Provided
Submittal Airflow	Not Provided
Sched./Sub. Volts	120
Sched./Sub. Phase	1
Sched./Sub. HP	1/4
Submittal BHP	Not Provided

Design Static Pressures (in wg)	
Design External SP	.3
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	Not Accessible w/out Disassembly
Motor Frame (tag)	-
Motor HP (tag)	-
Motor RPM (tag)	-
Motor Volts (tag)	-
Motor Phase (tag)	-
Motor Amps (tag)	-
Motor S.F. (tag)	-
Mtr % PF (tag)	-
Mtr % Eff. (tag)	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Final Airflow (CFM)	
Actual Airflow	987
Actual Grille Airflow	987
Fan CFM Test Method	Capture Hood
Test Method Ak (sq ft)	-

Unit Data	
Make (tag)	No Tag
Model # (tag)	-
Serial # (tag)	Not Located
Unit Location	Ceiling
Unit Discharge	Horizontal
Fan Service	Exhaust
Fan Type	Centrifugal (BI)
Fan Discharge	Horizontal
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Listed
Submittal Fan RPM	Not Provided

Fan Data	
Actual Fan RPM/Speed	100%
Actual Motor RPM	Not Accessible
Speed Cont. Position	100%

Electrical Data	
Measurement Method	Not Accessible
Motor Volts 1	-
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	-
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Not Applicable
Approx. BHP	
Corr. Nameplate Amps	

Fan

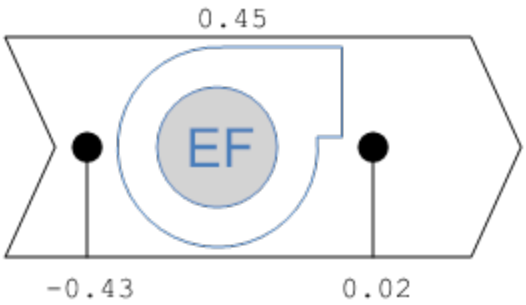
PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: EF-02/Static Profile

Tested By: Hank Wulk
Date: 1/24/2024

Static Pressure Profile



Fan

PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: EF-03

Design Airflow (CFM)	
Design Airflow	640
Design Grille Airflow	640

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	Not Provided
Submittal Airflow	Not Provided
Sched./Sub. Volts	120
Sched./Sub. Phase	1
Sched./Sub. HP	.17
Submittal BHP	Not Provided

Design Static Pressures (in wg)	
Design External SP	.5
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	BroadOcean
Motor Frame (tag)	Not Listed
Motor HP (tag)	1/6
Motor RPM (tag)	1750
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	2.2
Motor S.F. (tag)	Not Listed
Mtr % PF (tag)	-
Mtr % Eff. (tag)	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-

Final Airflow (CFM)	
Actual Airflow	509
Actual Grille Airflow	509
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	-

Unit Data	
Make (tag)	Greenheck
Model # (tag)	G-095-VG-1-17-X
Serial # (tag)	21818573
Unit Location	Roof
Unit Discharge	Downblast
Fan Service	Exhaust
Fan Type	Centrifugal (BI)
Fan Discharge	Horizontal
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	Not Provided

Fan Data	
Actual Fan RPM/Speed	Single Speed
Actual Motor RPM	Not Accessible
Speed Cont. Position	10

Electrical Data	
Measurement Method	Not Accessible
Motor Volts 1	-
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	-
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Not Applicable
Approx. BHP	
Corr. Nameplate Amps	

Fan

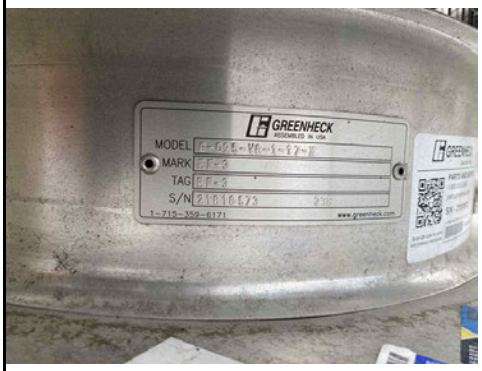
PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: EF-03

Drive Data	
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Make (tag) Photo:



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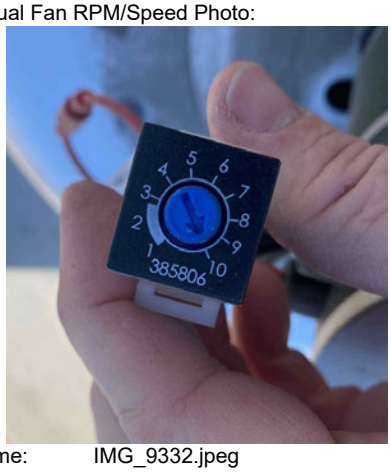
Caption:

Actual Fan RPM/Speed Photo:



Name: IMG_9332.jpeg
Captured: 2/16/2024 2:15 PM
Caption:

Log:

EF-03	Fan is operating at 80% of design on high speed. Recommend sealing bottom of fan to chase better.

Fan

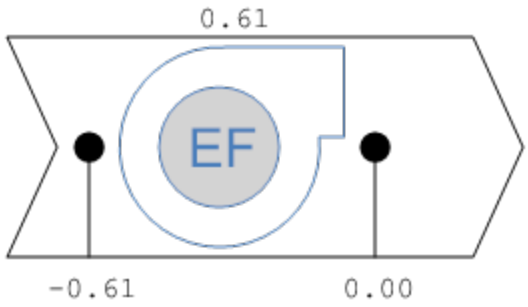
PROJECT: Nike E Rio Salado Pkwy
LOCATION: Tempe, AZ
PROJECT #: 24033

DATE: 2/16/2024
CONTACT: Armon Scott

SYSTEM/UNIT: EF-03/Static Profile

Tested By: Hank Wulk
Date: 1/24/2024

Static Pressure Profile



EF-03 Exhaust Inlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
E-01	150 Acc Fit RM	LD	8	160	138	127	79	Capture Hood	1.000	1.000	127
E-02	140 Fit RM	LD	8	160	91	115	72	Capture Hood	1.000	1.000	115
E-03	130 FIt RM	LD	8	160	158	131	82	Capture Hood	1.000	1.000	131
E-04	120 Fit Return	LD	8	160	181	136	85	Capture Hood	1.000	1.000	136
	Totals:	-	-	**640**	**568**	**509**	**80**	-	-	-	-

Instrument Calibration

Air Pressure Measurement					
Instrument Type:	ADM	**Date of Calibration:**	7/13/2023	**Measured Units**	in wg
Manufacturer:	Evergreen Telemetry	**Due for Calibration:**	7/13/2024	**Accuracy**	+/- 2%
Model:	S-PVF-1	**Range:**	+/- 60 in wg	**Resolution**	0.0001 in wg
Serial:	220179C			*Corrects local bar. press. to standard cond.	

Air Volume Measurement / Balometer					
Instrument Type:	Balometer	**Date of Calibration:**	7/13/2023	**Measured Units**	CFM
Manufacturer:	Evergreen Telemetry	**Due for Calibration:**	7/13/2024	**Accuracy**	+/- 2%
Model:	CH-15D / S-PVF-1	**Range:**	25-1500 CFM (Exhaust) 24-2500 CFM (Supply)	**Resolution**	1 CFM
Serial:	220179C				

Direct Air Velocity Measurement					
Instrument Type:	RVA	**Date of Calibration:**	7/18/2023	**Measured Units**	FPM
Manufacturer:	Extech	**Due for Calibration:**	7/18/2024	**Accuracy**	+/- 3%
Model:	AN300	**Range:**	80 - 5,900 FPM	**Resolution**	1 FPM
Serial:	21000125				

Electrical Measurement					
Instrument Type:	V/A Meter	**Date of Calibration:**	7/18/2023	**Measured Units**	Volts / Amperes
Manufacturer:	Fluke	**Due for Calibration:**	7/18/2024	**Accuracy**	1% / 2%
Model:	375 FC	**Range:**	0 - 600.0V / 0 - 600.0A	**Resolution**	0.1 V / 0.1 A
Serial:	56081376SV				

Hydronic Pressure Measurement					
Instrument Type:	HDM	**Date of Calibration:**	4/25/2023	**Measured Units**	psi, Ft, inches
Manufacturer:	Evergreen Telemetry	**Due for Calibration:**	4/25/2024	**Accuracy**	+/- 2%
Model:	S-DP-250	**Range:**	0.01 - 250 psi	**Resolution**	0.01 psi
Serial:	2200123B			*For use w/ADM	

Rotation Measurement					
Instrument Type:	Tachometer	**Date of Calibration:**	2/9/2023	**Measured Units**	RPM
Manufacturer:	Shimpo	**Due for Calibration:**	2/9/2024	**Accuracy**	+/- 1 RPM
Model:	DT-207LR	**Range:**	0.01 - 250 psi	**Resolution**	1 RPM
Serial:	D2150121R				

Rotation Measurement					
Instrument Type:	Stroboscope	**Date of Calibration:**	7/12/2023	**Measured Units**	RPM
Manufacturer:	Monarch	**Due for Calibration:**	7/12/2024	**Accuracy**	+/- 0.005%
Model:	PLS Pocket	**Range:**	30-300,000 RPM	**Resolution**	0.1 RPM
Serial:	2753796				

Instrument Calibration

Humidity WB/DB Measurement					
Instrument Type:	RH Meter	**Date of Calibration:**	7/13/2023	**Measured Units**	WB / %RH
Manufacturer:	Evergreen Telemetry	**Due for Calibration:**	7/13/2024	**Accuracy**	+/- 1°F / 2.5%RH
Model:	PR-TH-1	**Range:**	-4 to 140°F 0% - 100%RH	**Resolution**	0.1°F / .1 %RH
Serial:	2300198				

Temperature Measurement (Immersion)					
Instrument Type:	Temperature	**Date of Calibration:**	7/19/2023	**Measured Units**	°F
Manufacturer:	Evergreen Telemetry	**Due for Calibration:**	7/19/2024	**Accuracy**	+/- .05%
Model:	PR-T-4-6	**Range:**	−40°F to 500°F	**Resolution**	0.1°F
Serial:	2300252				

Temperature Measurement (Surface)					
Instrument Type:	Temperature	**Date of Calibration:**	7/11/2023	**Measured Units**	°F
Manufacturer:	Evergreen Telemetry	**Due for Calibration:**	7/11/2024	**Accuracy**	+/- .05%
Model:	PR-T-2	**Range:**	−40°F to 500°F	**Resolution**	0.1°F
Serial:	2300142				

Temperature Measurement Meter					
Instrument Type:	Temp Module	**Date of Calibration:**	7/13/2023	**Measured Units**	°F
Manufacturer:	Evergreen Telemetry	**Due for Calibration:**	7/13/2024	**Accuracy**	+/- .05%
Model:	MS - T&H-101	**Range:**	−40°F to 500°F	**Resolution**	0.1°F
Serial:	2300207C			*For use w/Imm./Sur.	

EVERGREEN TELEMETRY

Certificate of Calibration

United Test and Balance

Manufacturer	Evergreen Telemetry	Calibration Environment		
Product	Pressure / Velocity Module	Temperature	75	°F
Model	S-PVF-1	Rel. Humidity	42	%
SN	2200179C	Bar. Pressure	28.6	in Hg

☐ As Found ☒ As Left ☒ In Tolerance ☐ Out of Tolerance

Calibration Data

Measurement Variable	Test Point	Cal Standard	Allowable Range Min	Allowable Range Max	Test Instrument	
Barometric Pressure (in Hg)	Spec		-2% - 0.1	+ 2% + 0.1		
	1	20.0			20.1	
	2	28.6			28.7	
	3	33.0			33.1	
Differental Pressure (in wc)	Spec		-2%-.001	+2%+.001		
	1	10.00			9.973	
	2	2.000			1.990	
	3	0.5000			0.4977	
	4	0.0500			0.0498	
	5	-10.00			-10.022	
	6	-0.0500			-0.0498	
Via Pitot Velocity Pressure (inW.C. / FPM) -3% -7			-3% - 7	+3% + 7		
	7	.00067 / 103			104	
	8	.016 / 506			505	

Indicates out of tolerance condition ——→

NIST-Traceable Lab Calibration Standards

Variable	System ID	Calibration Last	Calibration Due
Pressure	7481227	8-Mar-23	8-Mar-25
Pressure	7568470	8-Mar-23	8-Mar-25
Pressure	7871917	16-Nov-21	16-Nov-23
Pressure	7870754	16-Nov-21	16-Nov-23
Pressure	2205000006	27-Jan-22	27-Jan-24
Velocity	2100191A	24-Feb-23	24-Feb-25

This instrument has been checked for accuracy, calibrated to manufacturer's specifications, and found to be within the specified tolerance unless otherwise stated. It has been calibrated using measurement standards traceable to the National Institue of Standards and Technology, or accepted intrinsic standards of measurement, or derived by the ratio type of self calibrated techniques.

Calibrated By	Calibration Date	Date Due
	13-Jul-2023	13-Jul-2025

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MICRO PRECISION

Certificate of Calibration

Date: Jul 19, 2023 **Cert No.** 5523631030212360

Customer:
UNITED TEST AND BALANCE INC

		Work Order #:	TX-8028008
		Purchase Order #:	CC
MPC Control #:	56081376SV	Serial Number:	56081376SV
Asset ID:	N/A	Department:	N/A
Gage Type:	CLAMP METER	Performed By:	JOSHUA MCLAND
Manufacturer:	FLUKE	Received Condition:	IN TOLERANCE
Model Number:	375 FC	Returned Condition:	IN TOLERANCE
Size:	N/A	Cal. Date:	July 18, 2023
Temp/RH:	69.0°F / 54.0%	Cal. Interval:	12 MONTHS
Location:	Calibration performed at MPC facility	Cal. Due Date:	July 18, 2024

Calibration Notes:
Three point calibration was performed. Unit under test passes calibration in accordance with manufacturer set tolerances.

Standards Used to Calibrate Equipment

I.D.	Description.	Model	Serial	Manufacturer	Cal. Due Date	Traceability #
DX3046	CALIBRATOR	5520A W/ SC600	8035004	FLUKE	Jul 31, 2023	551220085312712
EA4683	50 TURN CURRENT COIL	5500A / COIL	83010069	FLUKE		

Procedures Used in this Event

Procedure Name	Description
FLUKE 37X SUPPLEMENT Rev. ISS.5	Clamp Meter, Fluke 374/375/376, Iss.5, Jul-26-2016

Calibrating Technician: JOSHUA MCLAND QC Approval: MICHAEL RODRIGUEZ

MICRO PRECISION

Certificate of Calibration

Date: Jul 19, 2023 **Cert No.** 5523631030212360

Customer:
UNITED TEST AND BALANCE INC

		Work Order #:	TX-8028008
		Purchase Order #:	CC
MPC Control #:	56081376SV	Serial Number:	56081376SV
Asset ID:	N/A	Department:	N/A
Gage Type:	CLAMP METER	Performed By:	JOSHUA MCLAND
Manufacturer:	FLUKE	Received Condition:	IN TOLERANCE
Model Number:	375 FC	Returned Condition:	IN TOLERANCE
Size:	N/A	Cal. Date:	July 18, 2023
Temp/RH:	69.0°F / 54.0%	Cal. Interval:	12 MONTHS
Location:	Calibration performed at MPC facility	Cal. Due Date:	July 18, 2024

Calibration Notes:
Three point calibration was performed. Unit under test passes calibration in accordance with manufacturer set tolerances.

Standards Used to Calibrate Equipment

I.D.	Description.	Model	Serial	Manufacturer	Cal. Due Date	Traceability #
DX3046	CALIBRATOR	5520A W/ SC600	8035004	FLUKE	Jul 31, 2023	551220085312712
EA4683	50 TURN CURRENT COIL	5500A / COIL	83010069	FLUKE		

Procedures Used in this Event

Procedure Name	Description
FLUKE 37X SUPPLEMENT Rev. ISS.5	Clamp Meter, Fluke 374/375/376, Iss.5, Jul-26-2016

Calibrating Technician: JOSHUA MCLAND QC Approval: MICHAEL RODRIGUEZ

EVERGREEN TELEMETRY

Certificate of Calibration

United Test & Balance

Manufacturer	Evergreen Telemetry	Calibration Environment		
Product	Water Pressure Sensing Module	Temperature	75	°F
Model	S-DP-250	Rel. Humidity	24	%
SN	2200123B	Bar. Pressure	28.5	in Hg

☐ As Found ☒ As Left ☒ In Tolerance ☐ Out of Tolerance

Calibration Data

Specification +/- 2% +/- last digit Approx Set Point	Cal Std	Sensor 1 Diff Pres	Difference (%)	Cal Std	Sensor 2 Gage Lo	Diff %
PSI	(fwc)	(fwc)		(fwc)	(fwc)	
0.13	0.3	0.3	0	0.3	0.3	0
0.434	1.0	1.0	0	1.0	1.0	0
0.867	2.0	2.0	0	2.0	2.0	0
2.168	5.0	5.0	0	5.0	5.0	0
	PSI	PSI		PSI	PSI	
10	10.0	10.1	1.0	10.0	10.1	1.0
40	40.0	40.0	0.0	40.0	40.1	0.3
80	80.0	80.5	0.6	80.0	80.5	0.6
120	120.0	120.1	0.1	120.0	120.0	0.0
240	240.0	240.2	0.1	240.0	240.4	0.2

Conversion

PSI	fwc	inwc
1.00	2.307	27.68
0.434	1.00	12.00

Indicates out of tolerance condition ——→

NIST-Traceable Calibration Lab Standards

Variable	System ID	Calibration Last	Calibration Due
Pressure	5564304	20-Sep-21	20-Sep-23
Temperature	21396189	5-Oct-21	5-Oct-23

This instrument has been checked for accuracy, calibrated to manufacturer's specifications, and found to be within the specified tolerance unless otherwise stated. It has been calibrated using measurement standards traceable to the National Institue of Standards and Technology, or accepted intrinsic standards of measurement, or derived by the ratio type of self calibrated techniques.

Calibrated By	Calibration Date	Date Due
	25-Apr-2023	25-Apr-2024

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MICRO PRECISION

Certificate of Calibration

Date: Jul 19, 2023 **Cert No.** 5523631030212364

Customer:
UNITED TEST AND BALANCE INC

		Work Order #:	TX-8028008
		Purchase Order #:	CC
MPC Control #:	D21B0070R	Serial Number:	D21B0070R
Asset ID:	N/A	Department:	N/A
Gage Type:	TACHOMETER	Performed By:	JOSHUA MCLAND
Manufacturer:	NIDEC	Received Condition:	IN TOLERANCE
Model Number:	DT-207LR	Returned Condition:	IN TOLERANCE
Size:	N/A	Cal. Date:	July 18, 2023
Temp/RH:	69.0°F / 54.0%	Cal. Interval:	12 MONTHS
Location:	Calibration performed at MPC facility	Cal. Due Date:	July 18, 2024

Calibration Notes:
Three point calibration was performed. Unit under test passes calibration in accordance with manufacturer set tolerances.

Standards Used to Calibrate Equipment

I.D.	Description.	Model	Serial	Manufacturer	Cal. Due Date	Traceability #
DH0135	FUNCTION / ARBITRARY WAVEFORM GENERATOR	33120A	SG40019241	HEWLETT PACKARD	Mar 31, 2024	551220084949009

Procedures Used in this Event

Procedure Name	Description
DT-200LR SERIES Rev. NA	Check-Line DT-200LR Series Contact and no Contact Tachometer Specifications.

Calibrating Technician: JOSHUA MCLAND QC Approval: MICHAEL RODRIGUEZ

STATEMENTS OF PASS OR FAIL CONFORMANCE: The uncertainty of measurement has been taken into account when determining compliance with specification. All measurements and test results guard banded to ensure the probability of false-accept does not exceed 2% in compliance with ANSI/NCSL Z540.3-2006.

THE CALIBRATION REPORT STATUS:
PASS - Term used when compliance statement is given, and the measurement result is PASS.
PASS* - Term used when compliance statement is given, and the measurement result is conditional passed or PASS*.
FAIL - Term used when compliance statement is given, and the measurement result is FAIL.
FAIL* - Term used when compliance statement is given, and the measurement result is conditional failed or FAIL*.
REPORT OF VALUE - Term used when reported measurement is not requiring compliance statement in report.
ADJUSTED - When adjustments are made to an instrument which changes the value of measurement from what was measured as found to new value as left.
LIMITED - When an instrument fails calibration but is still functional in a limited manner.

The expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%, unless otherwise stated. This calibration report complies with ISO/IEC 17025:2017, ANSI/NCSL Z540.3-2006 and ANSI/NCSL Z540.1-1994. Calibration cycles and resulting due dates were submitted/approved by the customer. Any number of factors may cause an instrument to drift out of tolerance before the next scheduled calibration. Recalibration cycles should be based on frequency of use, environmental conditions and customer's established systematic accuracy. All standards are traceable to SI through the National Institute of Standards and Technology (NIST) and/or recognized national or international standards laboratories. Services rendered include proper manufacturer's service instruction and are warranted for no less than thirty (30) days. The information on this report pertains only to the instrument identified, this may not be reproduced in part or in a whole without the prior written approval of the issuing MP Calibration Laboratory.

(CERT, Rev 9)

MICRO PRECISION

Certificate of Calibration

UNITED TEST & BALANCE, INC.

Date: Jul 19, 2023 **Cert No.**

Customer:
UNITED TEST AND BALANCE INC

		Work Order #:	TX-8028008
		Purchase Order #:	CC
MPC Control #:	2753796	Serial Number:	2753796
Asset ID:	N/A	Department:	N/A
Gage Type:	POCKET LED STROBE	Performed By:	JOHNATHON BISERCHICH
Manufacturer:	MONARCH INSTRUMENTS	Received Condition:	IN TOLERANCE
Model Number:	PLS	Returned Condition:	IN TOLERANCE
Size:	N/A	Cal. Date:	July 12, 2023
Temp/RH:	70.0°F / 40.0%	Cal. Interval:	12 MONTHS
Location:	Calibration performed at MPC facility	Cal. Due Date:	July 12, 2024

Calibration Notes:
Three point calibration was performed. Unit under test passes calibration in accordance with manufacturer set tolerances.

Standards Used to Calibrate Equipment

I.D.	Description.	Model	Serial	Manufacturer	Cal. Due Date	Traceability #
CE9038	TACHOMETER	HHT13	1823361	OMEGA	Oct 31, 2023	551220085563017

Procedures Used in this Event

Procedure Name	Description
MONARCH NOVA-STROBE BXX	Stroboscope, Monarch Instrument Nova-Strobe BXX, May-07-2010

Calibrating Technician: JOHNATHON BISERCHICH QC Approval: MICHAEL RODRIGUEZ

STATEMENTS OF PASS OR FAIL CONFORMANCE: The uncertainty of measurement has been taken into account when determining compliance with specification. All measurements and test results guard banded to ensure the probability of false-accept does not exceed 2% in compliance with ANSI/NCSL Z540.3-2006.

THE CALIBRATION REPORT STATUS:
PASS - Term used when compliance statement is given, and the measurement result is PASS.
PASS* - Term used when compliance statement is given, and the measurement result is conditional passed or PASS*.
FAIL - Term used when compliance statement is given, and the measurement result is FAIL.
FAIL* - Term used when compliance statement is given, and the measurement result is conditional failed or FAIL*.
REPORT OF VALUE - Term used when reported measurement is not requiring compliance statement in report.
ADJUSTED - When adjustments are made to an instrument which changes the value of measurement from what was measured as found to new value as left.
LIMITED - When an instrument fails calibration but is still functional in a limited manner.

The expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%, unless otherwise stated. This calibration report complies with ISO/IEC 17025:2017, ANSI/NCSL Z540.3-2006 and ANSI/NCSL Z540.1-1994. Calibration cycles and resulting due dates were submitted/approved by the customer. Any number of factors may cause an instrument to drift out of tolerance before the next scheduled calibration. Recalibration cycles should be based on frequency of use, environmental conditions and customer's established systematic accuracy. All standards are traceable to SI through the National Institute of Standards and Technology (NIST) and/or recognized national or international standards laboratories. Services rendered include proper manufacturer's service instruction and are warranted for no less than thirty (30) days. The information on this report pertains only to the instrument identified, this may not be reproduced in part or in a whole without the prior written approval of the issuing MP Calibration Laboratory.

(CERT, Rev 9)

EVERGREEN TELEMETRY

Certificate of Calibration

United Test and Balance

Manufacturer	Evergreen Telemetry		Calibration Environment		
Temperature Product		Module	Probe	Temperature	76	°F
Model			PR-T-4-6	Rel. Humidity	37	%
SN			2300252	Bar. Pressure	28.6	in Hg

☐ As Found ☒ As Left ☒ In Tolerance ☐ Out of Tolerance

Calibration Data

Measurement Variable	Test Point	Cal Standard	Allowable Range Min	Allowable Range Max	Test Instrument
Cal Lab Module & Test Probe Temperature (°F)	Spec				
	1	78.9	-0.3	+0.3	78.9
	2	242.5	-2.6	+2.6	243.1
	3	-42.8	-1.6	+1.6	-42.7

Indicates out of tolerance condition ——↑

Calibration Standard SN & Dates

Variable	System ID	Calibration Last	Calibration Due
Temperature	21396189	5-Oct-21	5-Oct-23

This instrument has been checked for accuracy, calibrated to manufacturer's specifications, and found to be within the specified tolerance unless otherwise stated. It has been calibrated using measurement standards traceable to the National Institute of Standards and Technology, or accepted intrinsic standards of measurement, or derived by the ratio type of self calibrated techniques.

Calibrated By: Gwin Stoddard

19-Jul-2023 Calibration Date 19-Jul-2025 Date Due

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EVERGREEN TELEMETRY

Certificate of Calibration

United Test and Balance

Manufacturer	Evergreen Telemetry		Calibration Environment		
Product	Humidity Sensor		Temperature	75	°F
Model	PR-TH-1		Rel. Humidity	42	%
SN	2300198		Bar. Pressure	28.6	in Hg

☐ As Found ☒ As Left ☒ In Tolerance ☐ Out of Tolerance

Calibration Data

Measurement Variable	Test Point	Cal Standard	Allowable Range Min	Allowable Range Max	Test Instrument
Temperature (°F)	Spec				
	1	39.7	-1.0	1.0	39.5
	2	78.5	-1.0	1.0	78.3
	3	85.9	-1.0	1.0	85.9
	4	128.8	-2.0	2.0	129.4
Barometric Pressure (in Hg)	Spec		-2% - 0.1	+ 2% + 0.1	
	1	20.0			20.0
	2	28.5			28.4
	3	33.0			33.0
Humidity %RH 10 to 90%	Spec		-3	3	
	1	8.5			8.2
	2	26.9			26.9
	3	62.5			60.6
	4	86.8			85.5

Indicates out of tolerance condition ——↑

Calibration Standard

Variable	System ID	Calibration Last	Calibration Due
Temperature	21396189	5-Oct-21	5-Oct-23
Pressure	2205000006	27-Jan-22	27-Jan-24
Humidity	20558772	26-Oct-21	26-Oct-23

This instrument has been checked for accuracy, calibrated to manufacturer's specifications, and found to be within the specified tolerance unless otherwise stated. It has been calibrated using measurement standards traceable to the National Institute of Standards and Technology, or accepted intrinsic standards of measurement, or derived by the ratio type of self calibrated techniques.

Temperature accuracy (dry bulb) varies across the operating range:
Temperature over 32-100F +/- 1.0 F
Temperature over 100-158F +/- 2.0 F

Calibrated By: Gwin Stoddard

13-Jul-2023 Calibration Date 13-Jul-2024 Date Due

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EVERGREEN TELEMETRY

Certificate of Calibration

United Test and Balance

Manufacturer	Evergreen Telemetry		Calibration Environment		
Temperature Product		Module	Temperature	75	°F
Model		PR-T-2	Rel. Humidity	40	%
SN		2300142	Bar. Pressure	29.6	in Hg

☐ As Found ☒ As Left ☒ In Tolerance ☐ Out of Tolerance

Calibration Data

Measurement Variable	Test Point	Cal Standard	Allowable Range Min	Allowable Range Max	Test Instrument	
Cal Lab Module & Test Probe	Spec					
Temperature (°F)	1	78.7	-0.3	+0.3	78.8	
	2	241.3	-2.6	+2.6	241.6	
	3	-41.7	-1.6	+1.6	-42.8	

Indicates out of tolerance condition ——↑

Calibration Standard SN & Dates

Variable	System ID	Calibration Last	Calibration Due
Temperature	21396189	5-Oct-21	5-Oct-23

This instrument has been checked for accuracy, calibrated to manufacturer's specifications, and found to be within the specified tolerance unless otherwise stated. It has been calibrated using measurement standards traceable to the National Institue of Standards and Technology, or accepted intrinsic standards of measurement, or derived by the ratio type of self calibrated techniques.

Calibrated By

11-Jul-2023 Calibration Date

11-Jul-2025 Date Due

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EVERGREEN TELEMETRY

Certificate of Calibration

United Test and Balance

Manufacturer	Evergreen Telemetry		Calibration Environment		
Temperature Product	Module Sensor		Temperature	75	°F
Model	MS - T&H - 101		Rel. Humidity	42	%
SN	2300207C		Bar. Pressure	28.6	in Hg

☐ As Found ☒ As Left ☒ In Tolerance ☐ Out of Tolerance

Calibration Data

Measurement Variable	Test Point	Cal Standard	Allowable Range Min	Allowable Range Max	Test Instrument	
Cal Lab Probe & Test Module	Spec					
Temperature (°F)	1	78.7	-0.3	+0.3	78.7	
	2	242.4	-2.6	+2.6	243.1	
	3	-43.5	-1.6	+1.6	-43.4	

Indicates out of tolerance condition ——↑

Calibration Standard SN & Dates

Variable	System ID	Calibration Last	Calibration Due
Temperature	21396189	5-Oct-21	5-Oct-23

This instrument has been checked for accuracy, calibrated to manufacturer's specifications, and found to be within the specified tolerance unless otherwise stated. It has been calibrated using measurement standards traceable to the National Institue of Standards and Technology, or accepted intrinsic standards of measurement, or derived by the ratio type of self calibrated techniques.

Calibrated By

13-Jul-2023 Calibration Date

13-Jul-2025 Date Due

602.574.6192 ● info@evergreentelemetry.com ● www.evergreentelemetry.com ● 33 S Sycamore, Mesa, AZ 85202

UNITED TEST & BALANCE, INC.

Terms & Abbreviations

AHU	AIR HANDLING UNIT
AC OR ACU	AIR CONDITIONER UNIT
ACCU	AIR COOLED CONDENSING UNIT
ADJ P.D.	ADJUSTED PITCH DIAMETER
AMP	AMPERE
AVG	AVERAGE
B.H.P.	BRAKE HORSEPOWER
C.D.	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
C.E.	CEILING EXHAUST
CH	CHILLER
CHWR	CHILLED WATER RETURN
CHW OR CHWS	CHILLED WATER SUPPLY
C.R.	CEILING RETURN
CT	COOLING TOWER
CWR	CONDENSER WATER RETURN
CW OR CWS	CONDENSER WATER SUPPLY
DB	DRY BULB
D.D.	DIRECT DRIVE
D.P.	DIFFERENCE, NET DECREASE OR INCREASE
DIA	DIAMETER
D.N.A.	DATA NOT AVAILABLE
D.N.L	DATA NOT LISTED
EAT	ENTERING AIR TEMPERATURE
EDC	ELECTRIC DUCT COIL
EDH	ELECTRIC DUCT HEALER
EF	EXHAUST FAN
EMCS	ENERGY MANAGEMENT CONTROL SYSTEM
EWT	ENTERING WATER TEMPERATURE
FCU	FAN COIL UNIT
FH	FUME HOOD
FG	FLOOR GRILLE
F.E.	FLOOR EXHAUST OR RETURN
F.L.A	FULL LOAD AMPERAGE
FPB	FAN POWERED BOX
FPM	FEET PER MINUTE
F.S.	FLOOR SUPPLY
F.S.R	FLOOR SUPPLY REGISTER
FT. HD	FEET OF HEAD
GPM	GALLONS PER MINUTE
GFH	GAS FIRED HEATER
HC	HEATING COIL
HEATER O.L.	THERMAL OVERLOAD PROTECTION FOR MOTORS LOCATED AT THE MOTOR STARTER
HEPA	HIGH EFFICIENCY PARTICULATE AIR
H.F.	HEPA FILTER
HOA	HAND/OFF/AUTO SWITCH
H.P.	HORSEPOWER
HPS	HIGH PRESSURE STEAM
HRC	HEAT RECOVERY COIL OR HEAT RECLAIM COIL
HVAC	HEATING , VENTILATION AND AIR CONDITIONING
HWR	HOT WATER RETURN OR HEATING WATER RETURN
HWS	HOT WATER SUPPLY OR HEATING WATER SUPPLY
HX	HEAT EXCHANGER
I.D.	INSIDE DIAMETER
LAT	LEAVING AIR TEMPERATURE
L.D.	LINEAR SUPPLY DIFFUSER
LPS	LOW PRESSURE STEAM
L.T.	LIGHT TROFFER
LWG	LOW WALL GRILLE
LWR	LOW WALL RETURN
LWT	LEAVING WATER TEMPERATURE
MAU/MUA	MAKE UP AIR UNIT
MBH	1,000 BTU'S PER HOUR
N.A.	NOT ACCESSIBLE
N.I.	NOT INSTALLED
N.T.	NOT TAKEN
N.V.L	NO VALID LOCATION
N.Z.	NOZZLE
O.D.	OUTSIDE DIAMETER
OPEN	NO TERMINAL DEVICE INSTALLED
O.S.A. MIN	OUTSIDE AIR MINIMUM
OAT	OUTSIDE AIR TEMPERATURE
PF	POWER FACTOR
PHC	PREHEAT COIL
PH	PHASE(S)
PMP	CIRCULATING PUMP
PSI	POUNDS PER SQUARE INCH
P.T.	PITOT TRAVERSE
RA	RETURN AIR
RF	RETURN AIR FAN
R.G.	RETURN GRILLE
RHC	REHEAT COIL
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SAT	SUPPLY AIR TEMPERATURE
S.D.	SUPPLY DIFFUSER
SEF	SMOKE EXHAUST FAN
SF (AIR)	SUPPLY FAN
S.F. (ELECT)	SERVICE FACTORS
SHC	STEAM HEATING COIL
S.P. "W.C."	STATIC PRESSURE RESISTANCE, MEASURED IN INCHES OF WATER COLUMN
S.W.E.	SIDEWALL EXHAUST
S.W.R.	SIDEWALL RETURN
S.W.S.	SIDEWALL SUPPLY
TAB	TESTING, ADJUSTING, AND BALANCING
TSP	TOTAL STATIC PRESSURE
UH	UNIT HEATER
V	VOLTS
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
VP	VELOCITY PRESSURE
W	WATTS
WB	WET BULB
W.G.	WATER GAUGE
°F	DEGREES FAHRENHEIT
ΔP	DIFFERENTIAL (DELTA) PRESSURE OR PRESSURE DROP
ΔT	DIFFERENTIAL (DELTA) TEMPERATURE, NET TEMPERATURE DECREASE OR INCREASE

Warranty Page

United TAB provides a one-year warranty for the Test and Balance work associated with this project. The warranty period is one year from the date of this report and/or warranty page. Within the warranty period if the systems tested and reported show evidence of major performance deterioration, or is significantly out of tolerance, resulting from defective test and balance workmanship; United TAB will repair and/or replace defective work or materials if responsibility is solely identified as related to the TAB work. Any evidence of the following will be deemed as not a material work defect caused by tested and balance 1) evidence of improper materials, improper installation or failed control operations 2) evidence of controls, mechanical or commissioning contractor's failure to perform specified project requirements 3) evidence of the owner or occupant's failure to maintain mechanical systems.

If the warranty issue is found to be attributed to mechanical equipment, control or maintenance related failure, or any other cause not related to the TAB work, the return trip may be subject to a service charge. Important: United TAB reserves the right to resolve TAB issues and correct any errors or omissions in test data. If any third-party or competing agency (TAB or Commissioning) tests or adjust any equipment or fluid flows, ALL PROJECT WARRANTY IS VOIDED.

United TAB needs written notice for any TAB warranty item. Notice should be specific, itemized, and include any issues or concerns, including the specific location or system. After receiving written notice, United TAB will Assign a Project Manager to address the warrant issue. United TAB recommends an owner representative is on-site for the warrant visit.

For any balancing issues or concerns that arise, United TAB will return to the project site to address the issue or concern. United TAB will check and corroborate that the tested systems adhere with the reported data. This work will be performed at no charge.

United TAB's warranty covers comfort balancing for occupants at a maximum of one year or two warranty comfort balance visits.

As a default, TAB work is performed with systems configured for total design flow condition for both cooling and heating modes regardless of OA ambient temperature. Therefore, unless otherwise noted, this TAB report fulfills any Opposite Season requirements.

United TAB keeps an electronic file of all test documents through the end of the warranty period. During that time electronic copies of the report are provided at no charge. Extra paper copies may be subject to a fee. Building owners should keep all documentation for future reference. All documentation about this project will be destroyed in accordance with our record retention schedule.

KEYNOTES ARE PROTOTYPICAL. MISSING KEYNOTE NUMBERS INDICATE A PROTOTYPICAL NOTE IS NOT USED OR REMOVED.

MECHANICAL PLAN NOTES

- M01 ALL THERMOSTATS AND SENSORS ARE FURNISHED BY EMS VENDOR AND INSTALLED BY DIVISION 26, UNLESS NOTED OTHERWISE. DIVISION 26 SHALL COORDINATE EXACT DEVICE QUANTITIES, LOCATIONS, AND POWER CONNECTION(S) REQUIREMENTS WITH EMS VENDOR PRIOR TO CONSTRUCTION.
- M02 DO NOT INSTALL SENSORS ON WALL GRAPHICS. CONFIRM LOCATIONS OF SENSORS WITH PM PRIOR TO INSTALLATION.
- M03 INSTALL DAMPER AND ACTUATOR IN LOCATION INDICATED. DAMPER FURNISHED BY DIVISION 23. ACTUATOR FURNISHED BY EMS VENDOR.
- M12 DEMO EXISTING CURB AND PATCH ANY ROOF OPENINGS. PROVIDE NEW ROOFTOP UNIT AS SCHEDULED WITH NEW CURB. PROVIDE A NEW SET OF MERV 13 AIR FILTERS IN UNIT BEFORE TURNING SYSTEM OVER TO OWNER. COORDINATE CONDENSATE PIPING WITH DIVISION 22.
- M19 SMOKE DETECTORS AND WIRING IN RETURN AIR DUCTS SHALL BE PROVIDED BY DIVISION 28 CONTRACTOR. SMOKE DETECTORS SHALL SHUT-DOWN UNIT UPON ALARM.
- M23 EXHAUST FAN SERVES TO PROVIDE TRANSFER AIR ONLY AND SHALL DISCHARGE AIR INTO THE STOCKROOM.
- M30 ROUTE SHEET METAL RETURN AIR DUCT AS SHOWN WITH TERMINATION DIRECTED UPWARD. SIZE PLENUM FULL SIZE OF RETURN AIR INLET. PROVIDE DUCT LINER IN RETURN AIR DUCTWORK FOR SOUND ATTENUATION.
- M34 DO NOT ROUTE DUCTWORK OVER ELECTRICAL EQUIPMENT. NOTIFY ENGINEER OF CONFLICTS IN FIELD.
- M51 ARROWS INDICATE DIRECTION AND DISPERSION OF AIRFLOW VOLUME. PROVIDE VENTS ON FABRIC DUCT TO DIRECT AIRFLOW AS SHOWN ON PLAN.
- M53 FIELD FABRICATE L-BRACKET FOR SUPPORTING END OF FABRIC DUCT. COORDINATE REQUIREMENTS WITH FABRIC DUCT MANUFACTURER.
- M59 PROVIDE FABRIC DUCTWORK WITH TENSION CABLE THAT SHALL CONNECT DUCTWORK ENDCAP TO THE WALL. COORDINATE WITH FABRIC DUCTWORK VENDOR PRIOR TO INSTALL.
- M60 SUPPORT FABRIC DUCTWORK WITH MANUFACTURER'S DOUBLE-CABLE CROSS BRACING SUPPORTS. COORDINATE REQUIREMENTS WITH FABRIC DUCT MANUFACTURER.
- M61 PROVIDE FABRIC DUCT WITH AIRFLOW PERFORATIONS AT AN ANGLE OF 22.5° FROM HORIZONTAL TOWARDS THE SALES FLOOR.
- M65 LOUVERED DOOR FOR MAKEUP AIR BY GENERAL CONTRACTOR. REFER TO ARCHITECTURAL DRAWINGS FOR MORE INFORMATION.

FABRIC DUCT GENERAL NOTES:
PROVIDE FABRIC DUCT THROUGHOUT THE SPACE AS SHOWN ON PLAN. FABRIC DUCT SHALL NOT REPLACE RECTANGULAR DUCT DROPS OR EXHAUST DUCTS. BASIS OF DESIGN SHALL BE "PRIHODA", "NMI" NONPOROUS FABRIC WITH "PERFORATIONS" (AIR OPENINGS) WITH ADJUSTABLE FLOW DEVICES (I.E. AFD'S) AT OPENINGS, AND ONE ROW, GALVANIZED CABLE. INTERNAL HOOP SUPPORT SYSTEM SHALL BE PROVIDED ON ALL FABRIC DUCT UNLESS NOTED OTHERWISE. INCLUDE ALL COMPONENTS AND ACCESSORIES REQUIRED TO MAKE A COMPLETE SYSTEM AS RECOMMENDED BY PRIHODA DURING BID PHASE, INCLUDING HANGING STRAPS AND CLIPS, END-CAPS, CONNECTIONS TO METAL DUCTS, ETC. PRIHODA FABRIC DUCT SHALL BE SIZED PER FACTORY RECOMMENDATIONS TO PROVIDE MINIMUM AIRFLOWS IN BRANCH DUCTS AS SHOWN. CONFIRM FABRIC DUCT COLOR WITH ARCHITECT PRIOR TO ORDERING ON ALL PROJECTS. (FOR UNITE FIXTURE PACKAGE, WHITE IS BASIS OF DESIGN.) CONTACT PRIHODA SALES DEPARTMENT FOR PRICING INFORMATION: (E-MAIL: SALES@PRIHODA-NA.COM, PHONE: 1-855-774-4632)

FABRIC DUCT DESIGN GUIDELINE:
DISTRIBUTE AIRFLOW EVENLY ALONG FABRIC DUCT IN THE DIRECTION OF FLOW ARROWS. ORIENT AND SIZE FABRIC DUCT DIFFUSER OPENINGS TO PROVIDE A 50 FPM THROW VELOCITY HALF WAY TO THE NEAREST ADJACENT FABRIC DUCT OR TO THE NEAREST PARTITION/DEMISING WALL AS APPLICABLE. VENTS ON FABRIC DUCT SHALL BE LOCATED AT 22.5 DEGREES BELOW HORIZONTAL UNLESS NOTED OTHERWISE.

FABRIC DUCT COORDINATION NOTE:
DURING THE FIRST WEEK OF THE PROJECT, THE GENERAL CONTRACTOR'S SUPERINTENDENT, MECHANICAL SUB-CONTRACTOR, AND A REPRESENTATIVE FROM "PRIHODA" SHALL MEET AT THE PROJECT SITE FOR CONFIRMATION OF ALL FIELD DIMENSIONS AND POTENTIAL OBSTRUCTIONS. THIS EVENT MUST PRECEDE THE ORDERING OF ANY MATERIALS FROM "PRIHODA". CHANGE ORDERS AND EXPEDITING FEES WILL NOT BE APPROVED DUE TO LACK OF ON-SITE COLLABORATION AND/OR MEASUREMENT DURING SITE MEETING AT PROJECT COMMENCEMENT.

FABRIC DUCT INSTALLATION NOTE:
INSTALL FABRIC DUCT ABOVE ARCHITECTURAL LIGHTING SYSTEM. COORDINATE FABRIC DUCT INSTALLATION WITH GENERAL CONTRACTOR AND DIVISION 26. GENERAL CONTRACTOR SHALL VERIFY FABRIC DUCT IS INSTALLED SUCH THAT IT DOES NOT CLASH WITH ARCHITECTURAL LIGHTING SYSTEM, INCLUDING LIGHT FIXTURES, ARCHITECTURAL LIGHTING SYSTEM GRID AND SUSPENSION CABLES, OR ANY OTHER SUSPENDED FIXTURES WHEN DEFLATED.

THE DUCTWORK LAYOUT INDICATED ON THE DRAWINGS IS SCHEMATIC AND SHOWS DESIGNED INTENT ONLY. PRIOR TO FABRICATION AND INSTALLATION OF DUCTWORK, DIVISION 23 SHALL HAVE A QUALIFIED, EXPERIENCED SKETCHER PREPARE AND SUBMIT SHEET METAL SHOP DRAWINGS. SHOP DRAWINGS SHALL TAKE INTO ACCOUNT ALL EXISTING CONDITIONS, INCLUDING BUT NOT LIMITED TO, STRUCTURAL MEMBERS, CONDUITS AND PIPING TO REMAIN. SHOP DRAWINGS SHALL ALSO TAKE INTO ACCOUNT ALL NEW DESIGN CONDITIONS, INCLUDING BUT NOT LIMITED TO, STRUCTURAL MEMBERS, PIPING, CEILINGS, SOFFIT HEIGHTS, AND LIGHT FIXTURES.

SHOP DRAWINGS SHALL INDICATE ALL REVISIONS TO THE LAYOUT REQUIRED TO ACCOMMODATE THE EXISTING CONDITIONS AND/OR MAINTAIN THE CEILING HEIGHTS AND CLEARANCES REQUIRED. NOTIFY THE ARCHITECT AND ENGINEER OF ANY LOCATION WHERE THE DESIGN INTENT CANNOT BE MET PRIOR TO FABRICATION AND INSTALLATION OF DUCTWORK. REVISIONS TO DUCTWORK, EQUIPMENT, CONDUIT AND/OR PIPING REQUIRED BY CONTRACTOR'S FAILURE TO SUBMIT PROPERLY PREPARED SHOP DRAWINGS SHALL BE THE RESPONSIBILITY OF DIVISION 23 AT NO ADDITIONAL COST TO THE CLIENT OR DELAY TO THE PROJECT SCHEDULE.

GENERAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING TO ARCHITECT, ENGINEER, LANDLORD, AND BUILDING OFFICIAL/INSPECTOR A FINAL TEST AND BALANCE REPORT PER THE SPECIFICATIONS. PROVIDE TEST AND BALANCE REPORT TO ARCHITECT, ENGINEER, AND LANDLORD PRIOR TO THE FINAL BUILDING INSPECTION.

LANDLORD REQUIREMENTS:
LANDLORD APPROVED ROOFING CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ALL CUTS THROUGH THE EXISTING ROOF, MODIFYING EXISTING OPENINGS AND/OR ALTERING CURB FLASHING AT GENERAL CONTRACTOR'S EXPENSE. COORDINATE WITH GENERAL CONTRACTOR.

EMS CONTROLS:
CONTRACTORS ARE RESPONSIBLE FOR COORDINATING ALL EQUIPMENT CONTROLS WITH EMS VENDOR PRIOR TO PURCHASE AND INSTALLATION. CONTRACTORS SHALL COORDINATE WITH EMS VENDOR TO PROVIDE ALL NECESSARY EQUIPMENT AND ACCESSORIES FOR A FULLY FUNCTIONING SYSTEM.

TEMPERATURE CONTROLS:
EMS VENDOR SHALL FURNISH SENSORS AND CONTROL COMPONENTS AS INDICATED ON PLANS AND AS NECESSARY TO ACCOMPLISH THE INTENT OF THE DRAWINGS. ALL CONTROLS SHALL BE TIED INTO THE EMS SYSTEM UNLESS NOTED OTHERWISE.

GENERAL CONTRACTOR SHALL INSTALL CARRIER FURNISHED TEMPORARY THERMOSTATS AND FEED THE WIRING DOWN INTO THE SPACE FOR START UP AND CONTROL OF RTU(S) UNTIL THE EMS SYSTEM IS OPERABLE. REFER TO M3.0 FOR CARRIER CONTACT INFORMATION.

INSTALL DUCTWORK AND PIPING AS TIGHT TO STRUCTURE AS POSSIBLE. COORDINATE WITH OTHER TRADES TO AVOID CONFLICTS. COORDINATE INSTALLATION OF DUCTWORK AND PIPING TO AVOID CONFLICTS WITH ELECTRICAL PANELS, LIGHTING FIXTURES, ETC. DO NOT INSTALL DUCTWORK BELOW THE BOTTOM OF THE LIGHT FIXTURES.

1 HVAC PLAN
1/8" = 1'-0"

DRAWING USED FOR REFERENCE ONLY AND IS NOT TO BE SUBSTITUTED FOR CURRENT MEP DRAWING

Engineer:

Project Owner:
NIKE, Inc.
One Bowerman Drive
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www.nike.com

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TEMPE, AZ 85281
TEMPLATE ISSUE DATE: 11/28/2018

Fixture Package: UNITE

Stamp:

Issued For: CONSTRUCTION

Issue Date: 12/23/22

Revisions:

NO.	REASON	DATE
1	ADD #1	05/12/22
2	Bulletin #1	12/23/22

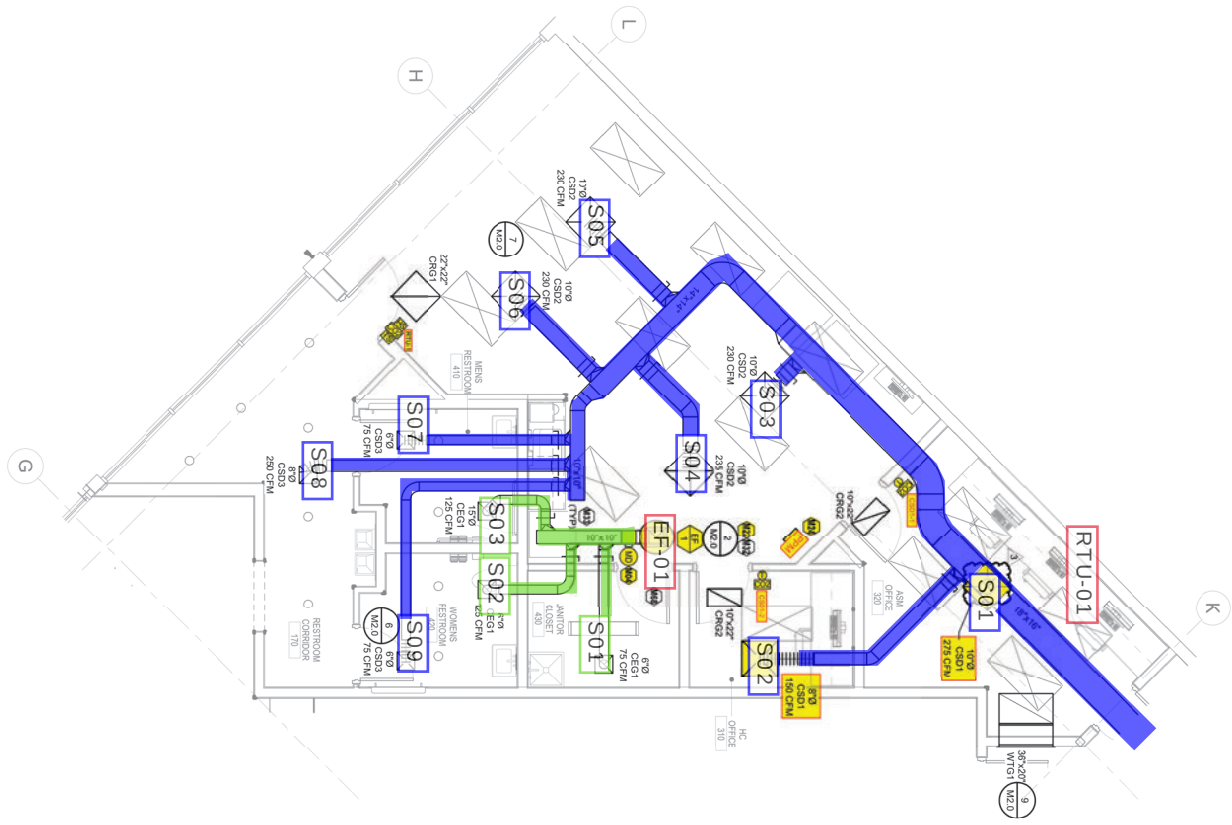
PROJECT MANAGER: MK
CHECKED BY:
DRAWN BY: Author

Project Number: 62301448

Sheet Title: MECHANICAL PLAN

Sheet Number: BAS-M1.0

TREVOR G. JONES



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

2 HVAC ENLARGED FITTING ROOMS
1/4" = 1'-0"

KEYNOTES ARE PROTOTYPICAL MISSING KEYNOTE NUMBERS INDICATE A PROTOTYPICAL NOTE IS NOT USED OR REMOVED.

MECHANICAL PLAN NOTES

M04 MOTORIZED DAMPER SHALL BE PROVIDED INTEGRAL TO EXHAUST FAN SHALL BE INTERLOCKED WITH EXHAUST FAN. MOTORIZED DAMPER IS SPECIFIED WITH EXHAUST FAN. REFER TO MECHANICAL SCHEDULES FOR MORE INFORMATION.

M12 DEMO EXISTING 2LB/8 AND PATCH ANY ROOF OPENINGS. PROVIDE NEW ROOFTOP UNIT AS SCHEDULED WITH NEW CURB. PROVIDE A NRW SET OF CURB ADAPTERS FOR EXISTING DUCTWORK CONNECTION. REFER TO OWNER COORDINATE CONDENSATE PIPING WITH DIVISION 22

M15 PROVIDE NEW VAV BOX IN SUPPLY AIR DUCT SERVING FITTINGROOMS. INSTALL VAV BOX IN ACCESSIBLE LOCATION AND COORDINATE CONTROLS WITH EMS VENDOR PRIOR TO ORDERING.

M18 FACILITY STAFF SHALL BE RELOCATED DURING CONSTRUCTION. COORDINATE REMAINS ACCESSIBLE. VERIFY NO OTHER PIPING, ELECTRICAL CONDUIT, STRUCTURE, AND/OR CEILING SUPPORTS IMPEDE ACCESS IN ACCORDANCE WITH ALL HVAC EQUIPMENT WITHIN 3' ABOVE CEILING FOR SERVICEABILITY.

M19 SMOKE DETECTORS AND WIRING IN RETURN AIR DUCTS SHALL BE PROVIDED BY DIVISION 28 CONTRACTOR. SMOKE DETECTORS SHALL SHUT-DOWN UNIT UPON ALARM.

M22 PROVIDE NEW ROOF-MOUNTED EXHAUST FAN AS SCHEDULED 'OR EQUAL'.

M24 INSTALL VAV POWER MODULE FOR CONTROL OF OFFICE VAV DIFFUSERS IN AN ACCESSIBLE LOCATION ABOVE THE CEILING. DIVISION 23 CONTRACTOR SHALL PROVIDE 120V POWER TO MODULE. REFER TO ELECTRICAL DRAWINGS FOR DETAILS.

M32 ROUTE EXHAUST AIR DUCTWORK TO NEW ROOF MOUNTED EXHAUST FAN. COORDINATE ROUTING WITH STRUCTURE AND OTHER OBSTACLES. ADJUST ROUTING TO MATCH.

M33 EXHAUST AIR DAMPERS SHALL BE ACCESSIBLE FROM BACK-OF-HOUSE LAY-IN CEILING. COORDINATE FINAL INSTALLED LOCATION SUCH THAT THE DAMPERS REMAIN ACCESSIBLE.

M47 COORDINATE ALL PENETRATIONS THROUGH DECK WITH WALL FRAMING PRIOR TO CONSTRUCTION. TRANSITION SUPPLY DUCTWORK BELOW DECK TO SIDE OF WALL AND INSTALL WITH SALES FLOOR. TRANSITION RETURN DUCTWORK BELOW DECK TO SIDE OF

M59 PROVIDE FABRIC DUCTWORK WITH TENSION CABLE THAT SHALL CONNECT DUCTWORK ENDCAP TO THE WALL. COORDINATE WITH FABRIC DUCTWORK VENDOR PRIOR TO INSTALL.

M66 PROVIDE GRILLE ON WALL FOR TRANSFER AIR. MOUNT AS HIGH AS POSSIBLE WITHOUT BEING IN CEILING. BLADES ANGLED UP TOWARDS STRUCTURE FOR REFLECTED VISIBILITY.

M67 COORDINATE LOCATION OF FITTING ROOM DIFFUSERS WITH LIGHTS, SPRINKLERS, SPEAKERS, AND OTHER CEILING DEVICES FOR A NEAT AND ORDERLY INSTALLATION. INSTALL CEILING DEVICES IN LINE WITH EACH OTHER WHERE POSSIBLE.

M68 PROVIDE 1" UNDERCUT ON DOOR TO ALLOW FOR MAKEUP AIR TRANSFER.

M69 DAMPER SHOWN ON VERTICAL RUN OF DUCTWORK.

M70 FIELD FABRICATE PLENUM AND ATTACH TO BACK SIDE OF DIFFUSER. MINIMUM SIZE OF PLENUM SHALL BE 48"(L)X9"(H)"(H). PROVIDE 1/4" CLOSED CELL INSULATION ON THE INTERIOR OF THE EXHAUST PLENUM.

M71 FRAMING. REFER TO ARCHITECTURAL PLANS FOR MORE INFORMATION. PROVIDE ROOF-MOUNTED EXHAUST FAN FOR FITTING ROOM AREA EXHAUST.

M95 PROVIDE LINEAR BAR DIFFUSER FOR FITTING ROOM EXHAUST PLENUM INTERIOR SURFACES OF DIFFUSER FLAT BLACK.

M96 PROVIDE UNEAR BAR DIFFUSER FOR FITTING ROOM EXHAUST PLENUM INTERIOR SURFACES OF DIFFUSER FLAT BLACK.

THE DUCTWORK LAYOUT INDICATED ON THE DRAWINGS IS SCHEMATIC AND SHOWS DESIGNED INTENT ONLY. PRIOR TO FABRICATION AND INSTALLATION OF DUCTWORK, DIVISION 23 SHALL HAVE A QUALIFIED EXPERIENCED SKETCHER PREPARE AND SUBMIT SHOP DRAWINGS FOR ALL DUCTWORK. SHOP DRAWINGS SHALL BE BASED ON EXISTING CONDITIONS INCLUDING BUT NOT LIMITED TO, STRUCTURAL MEMBERS, CONDUITS AND PIPING TO REMAIN. SHOP DRAWINGSSHALL ALSO TAKE INTO ACCOUNT ALL NEW DESIGN CONDITIONS, INCLUDING BUT NOT IMITED TO, STRUCTURAL MEMBERS, PIPING, CEILINGS, SOFFIT HEIGHTS, AND LIGHT FIXTURES.

SHOP DRAWINGS SHALL INDICATE ALL REVISIONS TO THE LAYOUT REQUIRED TO ACCOMMODATE THE EXISTING CONDITIONS AND/OR JMAINTAIN THE CEILING HEIGHTS AND CLEARANCES REQUIRED. NOTIFY THE ARCHITECT AND ENGINEER OF ANY INSTALLATION OF DUCTWORK. REVISIONS TO DUCTWORK, EQUIPMENT, CONDUIT AND/OR PIPING REQUIRED BY CONTRACTOR'S FAILURE TO SUBMIT PROPERLY PREPARED SHOP DRAWINGS SHALL BE THE RESPONSIBILITY OF DIVISION 23 AT NO ADDITIONAL COST TO THE CLIENT OR DELAY TO THE PROJECT SCHEDULE.

GENERAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING TO ARCHITECT, ENGINEER, LANDLORD, AND BUILDING OFFICIAL/INSPECTOR A FINAL TEST AND BALANCE REPORT PER THE SPECIFICATIONS. PROVIDE TEST AND BALANCE REPORT TO ARCHITECT, ENGINEER, AND LANDLORD PRIOR TO THE FINAL BUILDING INSPECTION.

LANDLORD REQUIREMENTS:
LANDLORD APPROVED ROOFING CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ALL CUTS THROUGH THE EXISTING ROOF, MODIFYING EXISTING OPENINGS, AND/OR ALTERING CURB FLASHING AT GENERAL CONTRACTOR'S EXPENSE. COORDINATE WITH GENERAL CONTRACTOR.

EMS CONTROLS:
CONTRACTORS ARE RESPONSIBLE FOR COORDINATING ALL EQUIPMENT CONTROLS WITH EMS VENDOR PRIOR TO PURCHASE AND INSTALLATION. CONTRACTORS SHALL COORDINATE WITH EMS VENDOR TO PROVIDE ALL NECESSARY EQUIPMENT AND ACCESSORIES FOR A FULLY FUNCTIONING SYSTEM.

TEMPERATURE CONTROLS:
LOCATION OF THERMOSTATS, SENSORS AND CONTROL COMPONENTS AS INDICATED ON PLANS AND AS NECESSARY TO ACCOMPLISH THEINTENT OF THE DRAWINGS. ALL CONTROLS SHALL BE TIED INTO THE EMS SYSTEM UNLESS NOTED OTHERWISE.

GENERAL CONTRACTOR SHALL INSTALL CARRIER FURNISHED TEMPORARY THERMOSTATS AND FEED THE WIRING DOWN INTO THE SPACE FOR START UP AND CONTROL OF RTUS) UNTIL THE EMS SYSTEM IS OPERABLE. REFER TO M03.0 FOR CARRIER CONTACT INFORMATION.

PROVIDE RFID DUCTWORK MESH OVER TRANSFER GRILLS BELOW 15'-0" AFF BETWEEN THE SPORTSROOM AND THE SALES FLOOR, IF APPLICABLE. COORDINATE REQUIREMENTS WITH CONSTRUCTION PROJECT MANAGER.

INSTALL DUCTWORK AND PIPING AS TIGHT TO STRUCTURE AS POSSIBLE. COORDINATE WITH OTHER TRADES TO AVOID CONFLICTS WITH ELECTRICAL CONDUIT AND PIPING. COORDINATE LIGHTING FIXTURES, ETC. DO NOT INSTALL DUCTWORK BELOW THE BOTTOM OF THE LIGHT FIXTURES. NOTIFY CONSTRUCTION PROJECT MANAGER OF CONFLICTS.

DRAWING USED FOR REFERENCE ONLY AND IS NOT TO BE SUBSTITUTED FOR CURRENT MEP DRAWING

Engineer:

Project Owner:

NIKE, Inc.
One Bowerman Drive
Beaverton, OR 97005
(503) 671-6453
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Project Address:

UNITE
2000 E RIO SALADO PKWY
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TEMPE, AZ 85281
TEMPLATE ISSUE DATE: 11/28/2018

Fixture Package:
UNITE

Stamp:

Issued For:
BULLETIN #2

Issue Date:
01/31/23

Revisions:

NO	REASON	DATE
2	Bulletin #1	12/23/22
3	Bulletin #2	01/31/23

PROJECT MANAGER:
MK
CHECKED BY:
DRAWN BY:
Author

Project Number:
6230144

Sheet Title:
MECHANICAL
ENLARGED PLANS

Sheet Number:
BAS-M1.1

DEDICATED OUTDOOR AIR SYSTEM - HEAT PUMP ROOFTOP UNIT

MARK	MANUFAC'URER	MODEL	NOMINAL TONS	UNIT TYPE	SUPPLY FAN							EXHAUST FAN							COOLING COIL						HEAT PUMP HEATINC COIL				ELECTRICAL				WEIGHT (LBS)	NOTES
					FAN TYPE	DESIGN CFM	MINIMUM CFM	ESP (IN)	BHP	NOM HP	VFD (Y/N)	FAN TYPE	DESIGN CFM	MINIMUM CFM	ESP (IN)	BHP	NCM H?	VFD (Y/N)	REFR TYRE	TH (MBH)	SH (MBH)	EAT (°F DB)	EAT (°F WB)	LAT (°F DB)	LAT (F WB)	MIN EFF EER	MIN NO STAGES	fIAX VEL (FPM)	MINOUT (MBH)	AMBIEN° (DB)	EAT (°F DB)	LAT (°F DB)	MIN EFF (ISCOP)	V/PH	MCA	MOCP	DISC TYPE		
DOAS-1	CAPTIVEAIRE	CASRTU3-20-15T	15	SINGLE ZONE VAV	VAV	3,200	1785	1.5	2.5	3.0	Y	VAV	2,750	1,535	3.3	1.2	1.5	Y	R-410A	185.0	92.0	82.0	71.3	55.0	53.3	14.0	2	266.0	1'8	33	33	70	4.5	208/3	88.9	90	NF	3561	AL.

MODEL NUMBERS AND NOMINAL TONS LISTED SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MAUFACTURER, MODEL NUMBERS, OR NOMINAL TONS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

A. REFERTO PACKAGED UNIT CONTROL MATRIX FOR ADDITIONAL UNIT FEATURES, COMPONENTS MODULES, ACCESSORIES, AND CONTROLS THAT SHALL BE PROVIDED WITH THE EQUIPMENT.
B. EQUIPMENT SIZED FOR 115 °F AMBIENT TIMPERATURE.
C. PROVIDE MERV 13 EFFICENT PLEATED THROWAWAY AIR FILTERS.
D. PROVIDE FACTORY MOUNTED DISCONNECT INSTALLED ON SERVICE SIDE OF UNIT.
E. STARTERS FOR ALL MOTORS SHALL BE FURNISHED INTEGRAL WITH UNIT.
F. PROVIDE FACTORY MOUNTED VARIABLE FREQUENCY DRIVE OR 2-SPEED MOTOR TO FACILITATE SODLE ATING FAN SPEED CONTROL
G. PROVIDE SHAFT GROUNDING SYSTEM ONFAN MOTOR. REFER TO MOTOR SFECIFICATION FORADDITIONAL INFCRMATION.
H. PROVIDE SINGLE POINT POWER CONNECTON.
I. COORDINATE SIZE OF CONDUCTOR TERMINATION LUGS WITH CONDUCTOR SIZES SHOWN ON ELECTRICAL DRAWINGS.
K. PROVIDE 125 VAC, 20 AMP DUPLEX CONVENIENCE RECEPTACLE MOUNTED TC UNIT READY FORFIELD WIRING WITH A COVER UL LISTED FOR WET AND DAMPER LOCTIONS WHEN IN USE.
L. SPECIFIED FAN ESP ACCOUNTS FOR DUC' LOSSES EXTERNAL TO UNIT.
N. PROVIDE MOTOR HORSEPOWER TO OVERCOME INTERNAL UNIT STATIC PRESSURE DROP PLUS SPECIFIED EXTERNAL STATIC PRESSURE DROP. NOMINAL MOTOR HP SHALL BE NO LARGER THAN THE FIRST AVAILABLE NOMINAL MOTOR SIZE GREATER THAN THE REQUIREL BHP.
P. PROVIDE INSULATED ROOF CURB WITH MINIMUM HEIGHT REQUIRED TO MAINFAIN BOTTOM OF !QUIPMENT A MIN-MUM OF 8 INCHES ABOVE FINISHED ROOF SURFACE. PROVIDE SLOPED CURB IF NEEDED TO MATCH ROSF SLOPE.
COORDINATE WITH ROO' INSULATION THICKNESS AND ROOF TAPER AT INSTALLED LOCATION. COORDINATE CURB TYPE WITH DRAWINGS.
R. SCHEDULED WEIGHT IS "HE MAXIMUM ALLOWABLE OPERATING WEIGHT OF THE EQUIPMENT AID CURB.
S. COOLING COIL LAT IS LEAVING AIR TEMPERATURE OF COIL
T. COOLING COIL SHALL BE CAPABLE OF MODULATING CAPACITY WITHOUT THEUSE OF HOT GASBYPASS. PROVIDE VARIABLE SPEED OR DIGITAL SCROLL LEAD COMPRESSOR FOR CAPACITY CONTROL.
U. TOTAL rEATING CAPACI'Y INCLUDES THEHEAT PUMP HEATING COIL CAPACIY AT THE AMBIENT DRY BULB TEMPERATURE LISTED PLUS THE AUXILARY HEATING COL OUTPUT LISTEC. HEAT PUMP HEATING COIL MINIMIM EFFICIENCY IS CALCULATED AT 17°F.
V. SELEC' EQUIPMENT FOR ELEVATION OF 900 FEET ABOVE SEA LEVEL.
W. PROVIDE GUARDS TO PROTECT CONDENSER COIL FROM HAIL OR OTHER DAMAGE.
Y. PROVIDE DEFROST CONTROL FOR THE ENERGY RECOVERY DEVICE.
Z. PROVIDE BYPASS DAMPERS AROUND THEENERGY RECOVERY DEVICE. SIZEENERGY RECOVERY DEVICE FOR DESIGN SUPPLY CIM.
AA. PROVIDE WITH RETURN AIR PATH AND RETURN AIR DAMPER SO DOAS CAN BE UTILIZED FOR BUILDING WARMUP.

OUTSIDE AIR REQUIREMENTS, IMC-2018 (IP)

SYSTEM DESIGNATION	SYSTEM TYPE:	SINGLE-ZONE SYSTEMS		MULT-ZONE SYSTEMS	FLOOR AREA SERVED BY SYSTEM [As] (SF)	SYSTEM AVERAGED AREA-BASED OUTDOOR AIR FATE (CFM/SF)	SYSTEM POPULATION [Ps] (PEOPLE)	SYSTEM AVERAGED PEOPLE-BASED OUTDOOR AIR RATE (CFM/P)	CODE REQUIREMENTS		DESIGN VALUES		NOTES
		VENTILATION ZONE ASSOCIATED WITH SYSTEM	'WORST CASE ZONE AIR DISTRIBUTION EFFECTIVENESS [Ez]	SYSTEM VENTILATION EFFICIENCY [Ev]					REQUIRED O/A INTAKE FLOW [Vot] (CFM)	REQUIRED DCV O/A INTAKE FLOW [Vot] (CFM)	MIN O/A INTAKE FLOW [Vo] (CFM)	ABS MIN O/A INTAKE FLOW [Vot] (CFM)	
RTU-1	MULTI-ZONE	-	-	0.86	1,178	0.050	7.25	5.0	111	69	140	75	ALL
DOAS-1	100% OA	-	-	-	11,932	0.146	141.72	9.4	3067	1738	3,200	1785	ALL
								TOTALS	3178	1807	**3,340**	**1,860**	

NOTES:
A. VENTILATION CALCULATIONS BASED ON2018 INTERNATIONAL MECHANICAL CODE.
B. SYSTIM POPULATIONS BASED ON MAX SEATING AND/OR CODE MAXIMUM VALUES.
C. MULTI-ZONE RECIRCULATING SYSTEMS: CALCULATOR TAKES THE MAXIMUM OUTSIDE AIRFLOW REQUIRED BY IMC ON A SYSTEMLEVEL. THE CALCULATION USED TC DETERMINE VENTILATION AIRFLOW IN COMPLIANCE WITH VRP AND SECTION 404.0.
VENTILATION RATE SHOWN IS ACTUAL CALCULATED WITHCORRECTION FACTORS INCLUDED EACH ZONE IS CALCULATED WITH TS WORST CASE ZONE AIR DISTRIBUTION EFFECTIVENESS (HEATING/COOLING) AS PART OF CALCULATIONS TO FIND Ev
D. THE ABSOLUTE MINIMUM OUTSIDE AIRFLOW (ABS MIN O/A) DESIGN VALUE IS THE DEMAND CONTROL VENTILATION (DCV) DESIGN AIRFLOW VALUE

HEAT PUMP ROOFTOP UNIT SCHEDULE

MARK	MANUFACTURER	MODEL	NOMINAL TONS	SUPPLY FAN CFM	SUPPLY FAN ESP (in)	SUPPLY FAN BHP	SUPPLY FAN VFD (Y/N)	COOLING COIL TH (MBH)	COOLING COIL SH (MBH)	COOLING COIL EAT (°F DB)	COOLING COIL EAT (°F WB)	COOLING COIL LAT (°F DB)	COOLING COIL LAT (°F WB)	COOLING COIL REFR TYPE	HEAT PUMP HEATING COIL MIN EFF (EER)	MIN EFF (IEER)	MIN EFF (SEER)	HEAT PUMP HEATING COIL MIN NO STAGES	HEAT PUMP HEATING COIL MIN OUT (MBH)	HEAT PUMP HEATING COIL AMBIENT (DB)	HEAT PUMP HEATING COIL EAT (°F DB)	HEAT PUMP HEATING COIL LAT (°F DB)	HEAT PUMP HEATING COIL MINEFF (COP)	HEAT PUMP HEATING COIL MINEFF (HSPF)	MIN O/A CFM	ABS MIN O/A	ELECTRICAL V/PH	ELECTRICAL MG	ELECTRICAL MOCP	WEIGHT (LBS)	NOTES
RTU1	TRANE	WS036D	5	1,750	0.5	0.7	Y	-5	37	75.7	62.2	56.7	53.7	R-410A	-	-	16.2	2	36.0	33	65.1	85.0	3.9	**8.3**	140	75	208/3	32	45	911	ALL
RTU2	TRANE	WS036B	4	1,750	0.5	0.7	Y	:8	35	72.C	59.9	52.8	52.3	R-410A	-	-	16.2	2	31.0	33	68.0	85.0	3.7	**8.3**	0	0	208/3	28	40	709	ALL
RTU-1-4	TRANE	WS036B	4	1,400	0.5	0.5	Y	:1	26	72.0	59.9	54.4	52.2	R-410A	-	-	16.2	2	25.0	33	68.0	85.0	3.8	**8.3**	0	0	208/3	28	40	704	ALL
RTU5	TRANE	WS0180	15	4,850	0.9	3.1	Y	118	98	72.C	59.9	52.8	50.9	R-410A	10.6	12	-	2	94.0	33	68.0	85.0	3.3	-	0	0	208/3	72	90	2571	ALL
RTU6	TRANE	WS0120	10	3,850	0.6	1.6	Y	85	80	72.C	59.5	52.3	51.8	R-410A	12	15.6	-	2	60.0	33	68.0	85.0	3.4	-	0	0	208/3	54	80	1172	ALL

MODEL NUMBERS AND NOMINAL TONS LISTED SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER, MODEL NUMBERS, OR NOMINAL TONS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE CRDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:
A. REFER TO ROOFTOP UNIT CONTROL MA'RIX FOR CONTRCL FEATURES, MODULES, AND ACCESSORIES THAT SHALL BE PROVIDED WITH THE EQUIPMENT.
B. EQUIPMENT SIZED FOR 115°F AMBIENT TIMPERATURE.
C. PROVIDE 2 2CiR MERV 13, EFFICIENT PLEATED THROWAWAY AIR FILTERS.
D. PROVIDE FACTORY MOUNTED DISCONNICT INSTALLED OF SERVICE SIDE OF UNIT.
E. STARTERS FOR ALL MOTORS SHALL BE FURNISHED INTEGRAL WITH UNIT.
F. PROVIDE FACTORY MOUNTED VARIABLEFREQUENCY DRIVE OR 2-SPEED MOTOR TO FACILITATE STAGED FAN SPEED CONTROL.
G. PROVIDE SHAF GROUNDING SYSTEM ON MOTOR. REFERTO MOTOR SPECIFICATION FOR ADDITIONAL INFORMATION.
H. PROVIDE SINGLE POINT POWER CONNECTION.
I. COORDINATE SIZE OF CONDUCTOR TERMINATION LUGS WITH CONDUCTOR SIZES SHOWN ONELECTRICAL DRAWINGS.
K. PROVIDE 125 VAC, 20 AMP DUPLEX CONNENIENCE RECEPTACLE MOUNTED TO UNIT READY FOR FIELD WIRING WITH A COVER ULLISTED FOR WET IND DAMPER LOCATIONS WHEN INUSE.
L. SPECIFIED FAN ESP ACCOUNTS FOR DUCT LOSSES EXTERNAL TO UNIT.
M. PROVDE MOTOR HORSEPOWER TO OVERCOME INTERNAL UNIT STATIC PRESSURE DROP PLIS SPECIFIED EXTERNAL STATIC PRESSURE DROP. NOMINAL MOTOR HP SHAL, BE NO LARGER "HAN THE FIRST AVAILABLE NOMINAL MOTOR SIZE GREATER THAN THE REQUIRED BHP.
N. PROVIDE INSULATED ROOF CURB WITH MINIMUM HEIGHT REQUIRED TO MAINTAIN BOTTOM O' EQUIPMENT A MINIMUM OF 8 INCHES ABOVE FINISHED ROOF SURFACE. PROVIDE SLOPED CURB IF NEECED TO MATCH ROOF SLOPE.
COORDINATE WITH ROOF INSULATION THICKNESS AND ROOF TAPER AT INSTALLED LOCATION. COORDINATE CURB TYPE WITH DRAWINGS.
Q. SCHEDULED WEIGHT IS THE MAXIMUM ALLOWABLE OPERATING WEIGHT OF THE EQUIPMENT IND CURB.
R. COOLING COIL LAT IS LEAVING AIR TEMPERATURE OF COIL
S. PROVIDE GUARDS TO PROTECT CONDENSER COIL FROM HAIL OR OTHER DAMAGE.
T. PROVIDE HEATER TO MEET OR EXCEED SCHEDULED MINIMUM MBH OUTPUT. NOMINAL INPUTIS BASED ON LISTED MANUFACTURER'S STANDARD PRODUCT. MEET MINIMUM EFFICIENCY SCHEDULED.
U. SELECT EQUIPMENT FOR ELEVATION OF 1107 FEET ABOVE SEA LEVEL.
V. ABS .IIN. OA IS THE ABSOLUTE MINIMUM OUTSIDE AIR CFU USING VENTILATION RESET OR DEMAND CONTROL VENTILATION.
X. PROVIDE UNIT WITH FACTORY INSTALLED BACNET OPEN BOARD CONTROLLER WITH SUPPLY AND OUTSIDE AIR TEMPERATURE SENSORS. COORDINATE ALL CONTROLS WITH EMS VENDOR PRIOR TO PURCHASE

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VAV TERMINAL SCHEDULE (COOLING ONLY)

MARK	SERVED FROM	ZONE SERVED	MANUFACTURER	MODEL	INIET SIZE (IN)	PRIMARY CFM	MIN PRIM CFM	GP TRANS V/PH	SOUND POWER RADIATED	SOUND POWER DISCHARGE	CONTROL TYPE	NOTES
VAV-1	RTUS	FITTING ROOMS	TITUS	DESV	'D	550	165	120V / 1PH	25	25	SINGLE MAX, AUTO CHANGE	A - G

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIA. SHALL NOT BE ORDERED BY MANUFACTURER AND JODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICA'IONS TC DETERMINE THEEXACT MATERIALAND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NCTES:
A. INSTALL FLEXIELE DUCT CONNECTOR AT INLET CONNECTION.
B. PROVIDE INTEGRAL DISCONNEC' SWITCH.
C. PROVIDE CONTROL POWER (CP)TRANSFORMER FACTORY INSTALLED. COORDINATE PRIMARY POWER WITH ELECTRICAL DRAWINGS.
D. BOX NOT TO EXCEED SCHEDULED DISCHARGE GRADIATED SOUND NC LEVEL USING 0.6 INCH PRESSURE DROP.
E. VAV CONTROLS SHALL BE FURNISHED BY EMS VENDOR FOR FIELD INSTALLATION BY DIVISION 23. COORDINATE REQUIREMENTS PRIOR TO INSTALLATION.
F. PROVIDE BOX WITH EITHER RIGT HAND OR LEFT -HAND CONFIGURATION AS SHOWN 3N DRAWINGS.
G. INLET SIZE SHOWN IS THE MINIMUM ALLOWABLE INLET SIZE. NO SMALLER SIZES SHALL BE ACCEPTED.

FAN SCHEDULE

MARK	SERVICE DESCRIPTION	MANUFACTURER	MOUNTING	MODEL	CFM	ESP (IN)	BHP	NOM HP	FAN RPM	DRIVE (BELT/DIRECT)	VFD (Y/N)	ELECTRICAL /1PH	WEIGHT (LBS:	NOTES
EF-1	RESTROOM	GREENHECK	ROOF	G-080-VG	325	0.5	0.05	1/10	1548	DIRECT	N	20/1	30	B,C,D,F,G,I,L
EF-2	IT CLOSET	GREENHECK	INLINE	SQ-100-VG	1000	0.3	0.13	1/4	1385	DIRECT	N	20/1	45	A,E,F,G,HK
EF-3	FITTING ROOMS	GREENHECK	ROOF	G-095-VG	640	0.5	0.15	0.17	1693	DIRECT	N	20/1	30	B,C,D,F,G,I,L

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIA, SHALL NOT BE ORDERED BY MANUFACTURER AND JODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICA'IONS TC DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NCTES:
A. INSTALL FAN WITHIN 16'-0" ABOVE FLOOR OR WITHIN 12" OF CEILING 'OR SERVICEABILTY. COORDINATE LOCATION WITHSTRUCTURE, LIGHTS, PIPING, ANDDUCTWORK SUCH THAT FAN IS FULLY ACCESSIBLE.
B. CONTRACTOR SHALL PROVIDE BIRDSCREEN AND MOTORIZED DAMPER CAPABLE OF ACCEPTING ACTUATOR PROVIDED BY EMS VENDOR. COORDINATE CONNECTIONS WITH EMS VENDOR PRIOR TO INSTALLATION.
C. PROVIDE INSULATED ROOF CURB WITH MINIMUM HEIGHT REQUIRED TO MAINTAIN BOTTOM OF EQUIPMENT A MINIMUM OF 16 INCHES ABOVE FINISHED ROOFSURFACE. PROVIDE SLOPED CURB IF NEEDED TO MATCH ROOF SLOPE. COORDINATE WITH ROOF INSULATION THICKNESS AND ROOF TAPER ATINSTALLED LOCATION. COORDINATE CURB TYPE WITH DRAWINGS.
D. INSTALL EXHAUST FAN OR EXTERIOR DUCT TERMINATION TO MAINTAIN A MINIMUM OF 15'-0" FROM AIR INTAKES.
E. PROVIDE WITH RUBBER IN SHEAR ISOLATION AND ¾"L-THREAD HANGING RODS.
F. PROVIDE WITH FACTORY-MOUNTED STARTER AND 3ISCONNECT SWITCH.
G. PROVIDE WITH FACTORY-MOUNTED CONTROL POWER TRANSFORMER CAPABLE OF ACCEPTING A 24V RELAY FROM EMS.
H. PROVIDE WITH MANUFACTURER'S ELECTRONICALLY COMMUTATED (EC) MOTOR. CONFRACTOR SHALL USE FAN POTENTIOMETER FOR BALANCING PURPOSES.
J. NOMINAL MOTOR HP SHALL BE NO LARGER THAN THE FIRST AVAILABLE NOMINAL MOTOR SIZE GREATER THAN THE BHP.
K. INTERLOCK FAN OPERATION WITH SPACE TEMPERATURE SENSOR. 24V RELAY FURNISHED BY EMS VENDOR.
L. INTERLOCK FAN OPERATION WITH EMS. 24V RELAY FURNISHED BY BMS VENDOR.

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

MARK	MANUFACTURER	SERVICE	MODEL	CONSTRUCTION TYPE	FACE TYPE	MOUNTING LOCATION	BORDER TYPE	FACESIZE (IN)	MAX NC	MAX. PRESS. DROP (IN. W.C.)	NOTES
CEG1	TITUS	EXHAUST	OMNI	STEEL	PLAQUE	CEILING	--	12x12	25	0.1	B, C, F -I-
CRG1	TITUS	RETURN	PAR	STEEL	PERFORATED	CEILING	--	24x24	25	0.1	B, C, F -I-
CRG2	TITUS	RETURN	PAR	STEEL	PERFORATED	CEILING	--	12x24	25	0.1	B, C, F -I-
CSD1	PRICE	SUPPLY	PRODIGY	STEEL	PLAQUE	CEILING	--	24x24	25	0.1	A - C, F - H J
CSD2	TITUS	SUPPLY	OMNI	STEEL	PLAQUE	CEILING	--	24x24	25	0.1	A - C, F - II
CSD3	TITUS	SUPPLY	OMNI	STEEL	PLAQUE	CEILING	--	12x12	25	0.1	A - C, F - II
CSD4	TITUS	SUPPLY	R-CSRM	STEEL	PLAQUE	CEILING	--	18'8	25	0.1	A - C, F - II
LEG1	TITUS	EXHAUST	FLOWBAR FL-10-JT	ALUMINUM	LINEAR SLOT	CEILING	22	1" LINEAR SLOT	25	0.1	G - H, M, II
PED1	--	EXHAUST	--	STEEL	1" PLENIM	LINEAR SLOT	--	4'-0" NOMINAL	25	0.1	B, M, N
WTG1	TITUS	TRANSFER	350RL	STEEL	LOUVERED	WALL	--	REFER TO PLANS	25	0.1	B - D, G, II

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIA, SHALL NOT BE ORDERED BY MANUFACTURER AND JODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TC DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NCTES:
A. 4-WAY THROW PATTERN UNLESS 9THERWISE INDICATED BY FLOW ARROWS ON DRAWNGS.
B. NECK SIZE SHOWN ON DRAWINGS. PROVIDE BRANCH DUCT TO MATCH NECK SIZE UNLESS OTHERWISE SHOWN ON DRAWNGS.
C. BAKED ENAMEL FINISH, COLOR TO MATCH WALL DUCT, AND/OR CEILING COLOR. COORDINATE WITH ARCHITECT PRIOR TO ORDERING.
D. FRONT BLADES PARALLEL TO LONG DIMENSION. INSTALL WALL GRILLI HIGH ON WALL WITH AIR BLADES POINTED UPWARD. COORDINATE EXACT LOCATIONS PRIOR TO INSTALLATION.
F. PROVIDE WITH RAPID MOUNT FRAMING OPTION FOR LAY-IN TYPE DIFFUSERS INSTALLED IN A HARD CEILING.
G. FRAME TYPE TO MATCH CEILING/WALL CONSTRUCTION. COORDINATE WITH ARCHITECTURAL REFLECTED CEILING/WALL PLAN.
H. PROVIDE DIFFUSERS AND GRILLES WITH NO EXPOSED MOUNTING SCREWS. COORDINATE WITH MANUFACTURER FOR NECESSARY MOUNTING BRACKETS OR ACCESSORIES.
I. VARIABLE VOLUME DIFFUSER TO BE INTERLOCKED WITH SPACE MOUNTED THERMOSTAT. MAXIMUMM AIRFLOW SHALL BEAS NOTED ON PLANS. MINIMUM AIRFLOW SHALL BE 10% OF MAXIMUM AIRFLOW. PROVIDE PRESSURE RELIEF COLLAR WITH IIFFUSER. DIFFUSER SHALL BE FURNISHED BY EMS VENDOR, INSTALLED BY MECHANICAL CONTRACTOR.

EXHAUST AIR REQUIREMENTS, IMC 2018
SINGLE ZONE, EXHAUST FAN SYSTEMS

Exhaust System	Space Name	Floor Level or Group Name	Code Minimum Exhaust Airflow (CFM)	Design Exhaust Airflow (CFM)	Criteria Used to Set the Design Airflow (CFM)
EF-1	RESTROOMS	EF-1	100	325	Manual Override
EF-3	FITTING ROOMS	EF-3	64	640	Manual Override

EXHAUST SUMMARY	
FAN	TOTAL
EF-3	640
EF-1	325

EMS CONTROLS:
CONTRACTORS ARE RESPONSIBLE FOR COORDINATNG ALL EQUIPMENT CONTROLS WITH EMS VENDOR PRIOR TO PURCHASE AND INSTALLATION. CONTRACTORS SHALL COORDINATE WITH EMS VENDOR TO PROVIDE ALL NECESSARY EQUIPMAEST AND ACCESSORIES FOR A FULLY FUNCTIONING SYSTEM.

DRAWING USED FOR REFERENCE ONLY AND IS NOT TO BE SUBSTITUTED FOR CURRENT MEP DRAWING

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Fixture Package:
UNITE

Stamp:

Issued For:
BULLETIN #2

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