Report By:
United T&B
7013 Flagler Road,
Nordland, WA 98358

NATIONAL TAB

Comfort. Under control.

For :
National TAB
1329 E. Kemper Road
Suite 4210
Cincinnati, OH 45246

Report: TAB REPORT

Function: Test, Adjust, & Balance

Date: 01/20/2023

PROJECT

12-19 MATTISON AVE - DALLAS, TX (LAKESIDE VILLAGE)

9967 NORTH CENTRAL EXPRESSWAY

DALLAS, TX 75225

Client

Thermal Air

National TAB

Project Summary

The summary below provides a quick understanding of our scope of work and general testing procedures. Enclosed in the report is further detail about your building performance including recommendations, asset data, and pictures. Our focus is to work with the trades to remedy any issues or deficiencies during the actual field balancing and not after the balancing has occurred to achieve a positive environment and outcome. The level of success is determined by the availability of the trades, possible parts needed, or time constraints.

RTU's (Roof Top Units) w/ Diffusers

Each of the RTU's were measured at their terminal devices or via traverse to establish a total flow for that unit. Each RTU was adjusted to within tolerance of the engineer's design flow. Each outlet was then adjusted to within tolerance of the design flow. Outside air was measured by reading the intake air opening with a velocity grid and multiplying by the free area. The outside air damper was adjusted until the airflow was within the design requirements. Any equipment that fell outside of that tolerance is noted throughout the report.

General Exhaust Fans w/ Grilles

The general exhaust fans were measured by reading each air device with a flow hood. The total airflow for each fan is equivalent to the sum of these readings. Fan speed was then adjusted so that the airflow was within tolerance of design. Each terminal device was balanced to within tolerance of the design volume using the installed volume dampers. Any equipment that fell outside of this tolerance is noted throughout the report.

Final Building Tests

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

The hood capture was tested at the perimeter of the hood and the cook top level with the equipment heat on to ensure satisfactory hood capture and containment.

Air Apparatus

SYSTEM/UNIT: RTU-01

Tested By: Clayton Nelson
Date: 1/20/2023

Design Airflow (CFM)	
Design Total	4000
Design Grille Total	4000
Design Return	3050
Design Min O/A	950

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	Not Provided
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)	Not Listed

Design Static Pressures (in wg)	
Design Ext SP	1.0
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	Not Provided

Design Temperatures (°F)	
RTU-01/Cooling	
Des. Ent. DB (°F)	80
Des. Ent. WB (°F)	67
Design LAT DB (°F)	Not Provided
Design LAT WB (°F)	Not Provided
RTU-01/Heating	
Design EAT DB (°F)	Not Provided
Design LAT DB (°F)	Not Provided

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

Final Airflow (CFM)	
Actual Total CFM	4994
Actual Grille Total CFM	4994
Actual Return Air CFM	3993
Actual Min O/A CFM	1001
Fan CFM Test Method	Supply Outlet Total
OA Method/Instrument	Face Velocity/RVA
OA Ak (sq ft)	2.670
OA Damper Position	5% Open
RA Damper Position	Not Applicable
RTU-01/Heating	
Actual Heating CFM	4994

Unit Data	
Make (tag)	Trane
Model # (tag)	YSC120A3ELA230000
Serial # (tag)	536102930L
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	11.0
Clg Coil Vel (FPM)	454
Fan Service	Supply
Fan Type	Centrifugal (FC)
Fan Discharge	Downblast
Fan Arrangement	DWDI
RTU-01/Heating	
Coil Location	Unit / Discharge

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

Fan Data	
Actual Fan RPM/Speed	1075
Actual Motor RPM	1725

Air Apparatus

SYSTEM/UNIT: RTU-01

Tested By: Clayton Nelson
Date: 1/20/2023

Filter Data	
# Filters Set 2	-

Motor Nameplate Data	
Motor Make	G.E.
Motor Frame	56HZ
Motor HP	3.00
Motor RPM	1725
Motor Volts	208
Motor Phase	3
Motor Amps	9.4
Motor S.F.	1.15
Motor % PF	Not Listed
Motor % Eff.	Not Listed
Other Motor Data	-

Drive Data	
Drive Type	Belt Drive
Sheave Type	Variable
Fan Sheave Make	Browning
Fan Shv Mod# or Size (in)	AK58
Fan Sheave Bore (in)	1
Motor Sheave Make	Browning
Mtr Shv Mod# or Size (in)	1VL44
Motor Sheave Bore (in)	7/8
VP Range	Fully Closed
Center Distance (in)	9.8
No of Belts	1
Belt Make	Browning
Belt Size	AX35
Other Data	-

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	211
Motor Volts 2	211
Motor Volts 3	211
Motor Amps 1	10.4
Motor Amps 2	10.3
Motor Amps 3	10.2
Operating HZ	60.00
Approx. BHP	3.4
Corr. Nameplate Amps	9.3
Starter Data	Not Applicable
VFD Reference	Not Applicable

Actual Temperatures (°F)	
RTU-01/Cooling	
Outside Air DB	See Note
Outside Air WB	-
Entering Air DB	-
Entering Air WB	-
Leaving Air DB	-
Leaving Air WB	-
RTU-01/Heating	
Entering Air DB	-
Leaving Air DB	-

Make (tag) Photo:

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Captured: 12/30/2022 1:06 PM
Caption:

Air Apparatus

SYSTEM/UNIT: RTU-01

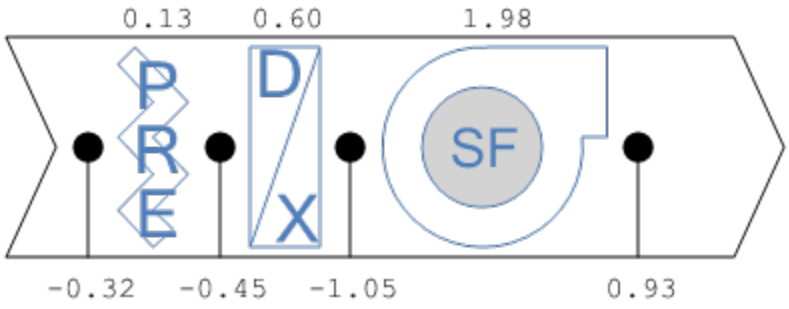
Tested By: Clayton Nelson
Date: 1/20/2023

Log:		
	RTU-01	Existing unit is operating at 125% of design. The existing motor sheave is stuck and will not adjust.
	RTU-01	Existing outside air is not properly sealed.
	RTU-01	Recommend servicing the cooling on the existing unit.
	RTU-01	Existing mesh outside air intake is damaged and should be replaced.

SYSTEM/UNIT: RTU-01/Static Profile

Tested By: Clayton Nelson
Date: 1/20/2023

Static Pressure Profile



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	Hallway	CD	14	100	770	130	130	Capture Hood	1.000	1.000	130
S-02	Workroom	CD	12	350	64	430	123	Capture Hood	1.000	1.000	430
S-03	Manager	CD	10	250	452	315	126	Capture Hood	1.000	1.000	315
S-04	Salon	CD	10	275	24	335	122	Capture Hood	1.000	1.000	335
S-05	Salon	CD	12	550	610	638	116	Capture Hood	1.000	1.000	638
S-06	Salon	CD	12	425	695	546	128	Capture Hood	1.000	1.000	546
S-07	Salon	CD	12	375	61	460	123	Capture Hood	1.000	1.000	460
S-08	Salon	CD	14	125	763	160	128	Capture Hood	1.000	1.000	160
S-09	Salon	CD	12	400	615	510	128	Capture Hood	1.000	1.000	510
S-10	Salon	CD	12	375	17	485	129	Capture Hood	1.000	1.000	485
S-11	Salon	CD	12	450	293	560	124	Capture Hood	1.000	1.000	560
S-12	Salon	CD	10	325	484	425	131	Capture Hood	1.000	1.000	425
	Totals:	-	-	**4000**	**4848**	**4994**	**125**	-	-	-	-

Air Apparatus

SYSTEM/UNIT: RTU-02

Tested By: Clayton Nelson
Date: 1/20/2023

Design Airflow (CFM)	
Design Total	5000
Design Grille Total	5150
Design Return	4050
Design Min O/A	950

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	Not Provided
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)	Not Listed

Design Static Pressures (in wg)	
Design Ext SP	1.0
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	Not Provided

Design Temperatures (°F)	
RTU-02/Cooling	
Des. Ent. DB (°F)	80
Des. Ent. WB (°F)	67
Design LAT DB (°F)	Not Provided
Design LAT WB (°F)	Not Provided
RTU-02/Heating	
Design EAT DB (°F)	Not Provided
Design LAT DB (°F)	Not Provided

Filter Data	
Condition	Partially Loaded
Filter Type	Disposable
MERV Rating	8
Filter Size Set 1 (in)	16/20/2
# Filters Set 1	8
Filter Size Set 2 (in)	-

Final Airflow (CFM)	
Actual Total CFM	6421
Actual Grille Total CFM	6421
Actual Return Air CFM	5521
Actual Min O/A CFM	900
Fan CFM Test Method	Supply Outlet Total
OA Method/Instrument	Face Velocity/RVA
OA Ak (sq ft)	10.000
OA Damper Position	10% Open
RA Damper Position	Not Applicable
RTU-02/Heating	
Actual Heating CFM	6421

Unit Data	
Make (tag)	Carrier
Model # (tag)	48TMD016-511YA
Serial # (tag)	0707U04112
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	20.0
Clg Coil Vel (FPM)	321
Fan Service	Supply
Fan Type	Centrifugal (FC)
Fan Discharge	Downblast
Fan Arrangement	DWDI
RTU-02/Heating	
Coil Location	Unit / Discharge

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

Fan Data	
Actual Fan RPM/Speed	1108
Actual Motor RPM	1741

Air Apparatus

SYSTEM/UNIT: RTU-02

Tested By: Clayton Nelson
Date: 1/20/2023

Filter Data	
# Filters Set 2	-

Motor Nameplate Data	
Motor Make	A.O. Smith
Motor Frame	S184T
Motor HP	5.00
Motor RPM	1745
Motor Volts	230
Motor Phase	3
Motor Amps	12.8
Motor S.F.	1.15
Motor % PF	83.3
Motor % Eff.	Not Listed
Other Motor Data	-

Drive Data	
Drive Type	Drive Not Accessible
Sheave Type	Variable
Fan Sheave Make	Browning
Fan Shv Mod# or Size (in)	BK100
Fan Sheave Bore (in)	1 7/16
Motor Sheave Make	Browning
Mtr Shv Mod# or Size (in)	1VP65
Motor Sheave Bore (in)	1
VP Range	Mid Range
Center Distance (in)	13.5
No of Belts	1
Belt Make	Bando
Belt Size	BX50
Other Data	-

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	214
Motor Volts 2	213
Motor Volts 3	213
Motor Amps 1	9.8
Motor Amps 2	10.2
Motor Amps 3	-
Operating HZ	60.00
Approx. BHP	3.6
Corr. Nameplate Amps	13.8
Starter Data	Not Applicable
VFD Reference	Not Applicable

Actual Temperatures (°F)	
RTU-02/Cooling	
Outside Air DB	See Note
Outside Air WB	-
Entering Air DB	-
Entering Air WB	-
Leaving Air DB	-
Leaving Air WB	-
RTU-02/Heating	
Entering Air DB	-
Leaving Air DB	-

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Caption:

Air Apparatus

SYSTEM/UNIT: RTU-02

Tested By: Clayton Nelson
Date: 1/20/2023

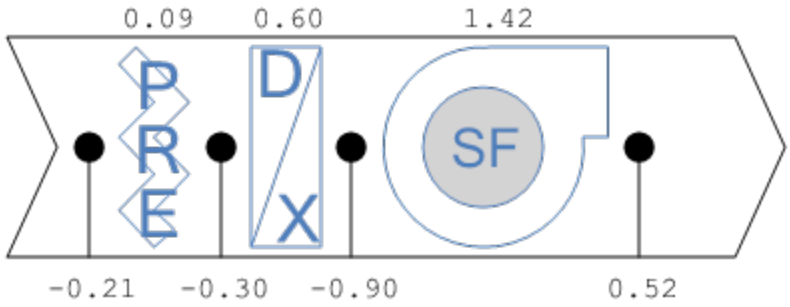
Log:

RTU-02	Recommend servicing the cooling on the existing unit.
RTU-02	Existing belt is loose and likely oversized. Recommend replacing.
RTU-02	Outside air intake filter is not installed.
RTU-02	Existing unit is operating at 128% of design. The existing motor sheave is stuck and will not adjust.

SYSTEM/UNIT: RTU-02/Static Profile

Tested By: Clayton Nelson
Date: 1/20/2023

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	Salon	CD	12	400	792	499	125	Capture Hood	1.000	1.000	499
S-02	Salon	CD	12	375	219	487	130	Capture Hood	1.000	1.000	487
S-03	Salon	CD	12	375	440	472	126	Capture Hood	1.000	1.000	472
S-04	Restroom	CD	8	125	325	172	138	Capture Hood	1.000	1.000	172
S-05	Salon	CD	10	275	711	388	141	Capture Hood	1.000	1.000	388
S-06	Hallway	CD	14	100	362	129	129	Capture Hood	1.000	1.000	129
S-07	Salon	CD	12	250	256	319	128	Capture Hood	1.000	1.000	319
S-08	Salon	CD	12	250	294	344	138	Capture Hood	1.000	1.000	344
S-09	Salon	CD	10	350	495	472	135	Capture Hood	1.000	1.000	472
S-10	Salon	CD	10	350	701	470	134	Capture Hood	1.000	1.000	470
S-11	Restroom	CD	8	125	134	172	138	Capture Hood	1.000	1.000	172
S-12	Salon	CD	10	275	470	350	127	Capture Hood	1.000	1.000	350
S-13	Salon	CD	10	275	540	348	127	Capture Hood	1.000	1.000	348
S-14	Hallway	CD	14	100	839	129	129	Capture Hood	1.000	1.000	129
S-15	Entry	CD	12	300	356	419	140	Capture Hood	1.000	1.000	419
S-16	Entry	CD	12	300	383	423	141	Capture Hood	1.000	1.000	423
S-17	Entry	CD	12	325	0	395	122	Capture Hood	1.000	1.000	395
S-18	Entry	CD	12	325	0	433	133	Capture Hood	1.000	1.000	433
	Totals:	-	-	**4875**	**7317**	**6421**	**132**	-	-	-	-

Air Apparatus

SYSTEM/UNIT: RTU-03

Tested By: Clayton Nelson
Date: 1/20/2023

Design Airflow (CFM)	
Design Total	4000
Design Grille Total	3975
Design Return	3050
Design Min O/A	950

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	Not Provided
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)	Not Listed

Design Static Pressures (in wg)	
Design Ext SP	1.0
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	Not Provided

Design Temperatures (°F)	
RTU-03/Cooling	
Des. Ent. DB (°F)	80
Des. Ent. WB (°F)	67
Design LAT DB (°F)	Not Provided
Design LAT WB (°F)	Not Provided
RTU-03/Heating	
Design EAT DB (°F)	Not Provided
Design LAT DB (°F)	Not Provided

Filter Data	
Condition	Partially Loaded
Filter Type	Pleated
MERV Rating	-
Filter Size Set 1 (in)	20x20x2
# Filters Set 1	4
Filter Size Set 2 (in)	-

Final Airflow (CFM)	
Actual Total CFM	4646
Actual Grille Total CFM	4646
Actual Return Air CFM	3671
Actual Min O/A CFM	975
Fan CFM Test Method	Supply Outlet Total
OA Method/Instrument	Face Velocity/RVA
OA Ak (sq ft)	0.846
OA Damper Position	3.75” Open
RA Damper Position	Not Applicable
RTU-03/Heating	
Actual Heating CFM	4646

Unit Data	
Make (tag)	Carrier
Model # (tag)	48TMD012-A-501
Serial # (tag)	0407620670
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	11.1
Clg Coil Vel (FPM)	419
Fan Service	Supply
Fan Type	Centrifugal (FC)
Fan Discharge	Downblast
Fan Arrangement	DWDI
RTU-03/Heating	
Coil Location	Unit / Discharge

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

Fan Data	
Actual Fan RPM/Speed	986
Actual Motor RPM	1652

Air Apparatus

SYSTEM/UNIT: RTU-03

Tested By: Clayton Nelson
Date: 1/20/2023

Filter Data	
# Filters Set 2	-

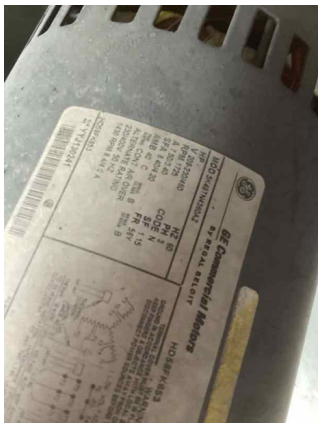
Motor Nameplate Data	
Motor Make	G.E.
Motor Frame	56Y
Motor HP	-
Motor RPM	1725
Motor Volts	208
Motor Phase	3
Motor Amps	7.5
Motor S.F.	1.15
Motor % PF	-
Motor % Eff.	-
Other Motor Data	

Drive Data	
Drive Type	Belt Drive
Sheave Type	Variable
Fan Sheave Make	Fenner
Fan Shv Mod# or Size (in)	AFD74
Fan Sheave Bore (in)	1
Motor Sheave Make	Not Listed
Mtr Shv Mod# or Size (in)	4.5
Motor Sheave Bore (in)	7/8
VP Range	Fully Closed
Center Distance (in)	17.0
No of Belts	1
Belt Make	Browning
Belt Size	AX49
Other Data	-

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	212
Motor Volts 2	213
Motor Volts 3	212
Motor Amps 1	8.7
Motor Amps 2	9.0
Motor Amps 3	8.9
Operating HZ	60.00
Approx. BHP	
Corr. Nameplate Amps	7.4
Starter Data	Not Applicable
VFD Reference	Not Applicable

Actual Temperatures (°F)	
RTU-03/Cooling	
Outside Air DB	-
Outside Air WB	-
Entering Air DB	-
Entering Air WB	-
Leaving Air DB	-
Leaving Air WB	-
RTU-03/Heating	
Entering Air DB	-
Leaving Air DB	-

Motor Make Photo:



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Caption:

Air Apparatus

SYSTEM/UNIT: RTU-03

Tested By: Clayton Nelson
Date: 1/20/2023

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Caption:

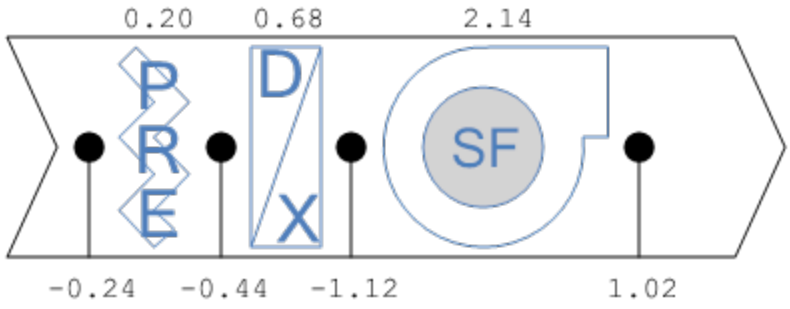
Log:

RTU-03	Existing unit is operating at 116% of design. The existing motor sheave is stuck and will not adjust.

SYSTEM/UNIT: RTU-03/Static Profile

Tested By: Clayton Nelson
Date: 1/20/2023

Static Pressure Profile



Air Apparatus

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	Hallway	CD	14	200	214	272	136	Capture Hood	1.000	1.000	272
S-02*	Salon	CD	12	450	0	0	0	Capture Hood	1.000	1.000	0
S-03	Salon	CD	12	275	431	363	132	Capture Hood	1.000	1.000	363
S-04	Salon	CD	10	275	172	356	129	Capture Hood	1.000	1.000	356
S-05	Salon	CD	10	275	333	357	130	Capture Hood	1.000	1.000	357
S-06	Hallway	CD	10	150	665	204	136	Capture Hood	1.000	1.000	204
S-07	Salon	CD	14	275	149	362	132	Capture Hood	1.000	1.000	362
S-08	Salon	CD	10	275	454	363	132	Capture Hood	1.000	1.000	363
S-09	Salon	CD	10	275	395	366	133	Capture Hood	1.000	1.000	366
S-10	Salon	CD	12	425	540	550	129	Capture Hood	1.000	1.000	550
S-11	Salon	CD	12	275	495	353	128	Capture Hood	1.000	1.000	353
S-12	Salon	CD	10	300	61	375	125	Capture Hood	1.000	1.000	375
S-13	Salon	CD	10	275	444	365	133	Capture Hood	1.000	1.000	365
S-14	Salon	CD	10	275	410	360	131	Capture Hood	1.000	1.000	360
	Totals:	-	-	**4000**	**4763**	**4646**	**116**	-	-	-	-

Log: RTU-03/S-02 Outlet is connected to the return duct.

Air Apparatus

SYSTEM/UNIT: RTU-04

Tested By: Clayton Nelson
Date: 1/20/2023

Design Airflow (CFM)	
Design Total	4000
Design Grille Total	4000
Design Return	3050
Design Min O/A	950

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	Not Provided
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)	Not Listed

Design Static Pressures (in wg)	
Design Ext SP	1.0
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	Not Provided

Design Temperatures (°F)	
RTU-04/Cooling	
Des. Ent. DB (°F)	80
Des. Ent. WB (°F)	67
Design LAT DB (°F)	Not Provided
Design LAT WB (°F)	Not Provided
RTU-04/Heating	
Design EAT DB (°F)	Not Provided
Design LAT DB (°F)	Not Provided

Filter Data	
Condition	Partially Loaded
Filter Type	Pleated
MERV Rating	-
Filter Size Set 1 (in)	20x20x2
# Filters Set 1	4
Filter Size Set 2 (in)	-

Final Airflow (CFM)	
Actual Total CFM	4056
Actual Grille Total CFM	4056
Actual Return Air CFM	3049
Actual Min O/A CFM	1007
Fan CFM Test Method	Supply Outlet Total
OA Method/Instrument	Face Velocity/RVA
OA Ak (sq ft)	0.790
OA Damper Position	3.5” Open
RA Damper Position	Not Applicable
RTU-04/Heating	
Actual Heating CFM	4056

Unit Data	
Make (tag)	Carrier
Model # (tag)	48TMD012-A-501
Serial # (tag)	0087G21786
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	11.1
Clg Coil Vel (FPM)	365
Fan Service	Supply
Fan Type	Centrifugal (FC)
Fan Discharge	Downblast
Fan Arrangement	DWDI
RTU-04/Heating	
Coil Location	Unit / Discharge

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

Fan Data	
Actual Fan RPM/Speed	915
Actual Motor RPM	1700

Air Apparatus

SYSTEM/UNIT: RTU-04

Tested By: Clayton Nelson
Date: 1/20/2023

Filter Data	
# Filters Set 2	-

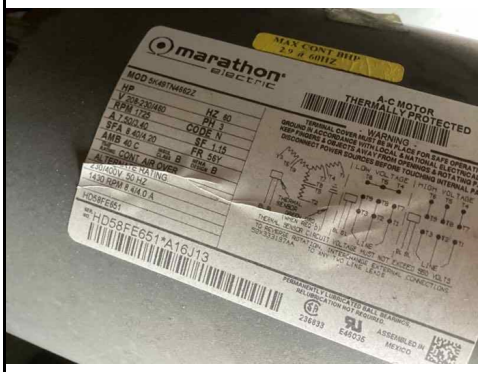
Motor Nameplate Data	
Motor Make	Marathon
Motor Frame	56Y
Motor HP	-
Motor RPM	1725
Motor Volts	208
Motor Phase	3
Motor Amps	7.5
Motor S.F.	1.15
Motor % PF	-
Motor % Eff.	-
Other Motor Data	-

Drive Data	
Drive Type	Belt Drive
Sheave Type	Variable
Fan Sheave Make	Fenner
Fan Shv Mod# or Size (in)	AFD74
Fan Sheave Bore (in)	1
Motor Sheave Make	Not Listed
Mtr Shv Mod# or Size (in)	4.75
Motor Sheave Bore (in)	7/8
VP Range	Fully Closed
Center Distance (in)	16.5
No of Belts	1
Belt Make	Gates
Belt Size	A49
Other Data	-

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	212
Motor Volts 2	213
Motor Volts 3	213
Motor Amps 1	6.4
Motor Amps 2	6.7
Motor Amps 3	6.3
Operating HZ	60.00
Approx. BHP	
Corr. Nameplate Amps	7.4
Starter Data	Not Applicable
VFD Reference	Not Applicable

Actual Temperatures (°F)	
RTU-04/Cooling	
Outside Air DB	-
Outside Air WB	-
Entering Air DB	-
Entering Air WB	-
Leaving Air DB	-
Leaving Air WB	-
RTU-04/Heating	
Entering Air DB	-
Leaving Air DB	-

Motor Make Photo:



Name: Motor Make.jpg
Captured: 1/16/2023 3:22 PM
Caption:

Air Apparatus

SYSTEM/UNIT: RTU-04

Tested By: Clayton Nelson
Date: 1/20/2023

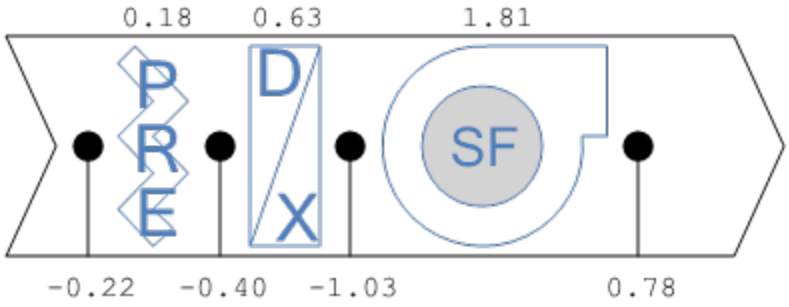
Make (tag) Photo:

Name: Make (tag).jpg
Captured: 12/30/2022 1:13 PM
Caption:

SYSTEM/UNIT: RTU-04/Static Profile

Tested By: Clayton Nelson
Date: 1/20/2023

Static Pressure Profile



Air Apparatus

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	Salon	CD	12	400	17	405	101	Capture Hood	1.000	1.000	405
S-02	Salon	CD	12	400	452	416	104	Capture Hood	1.000	1.000	416
S-03	Hallway	CD	14	150	567	142	95	Capture Hood	1.000	1.000	142
S-04	Salon	CD	12	400	431	390	98	Capture Hood	1.000	1.000	390
S-05	Salon	CD	12	400	403	417	104	Capture Hood	1.000	1.000	417
S-06	Salon	CD	12	400	53	403	101	Capture Hood	1.000	1.000	403
S-07	Salon	CD	12	350	614	356	102	Capture Hood	1.000	1.000	356
S-08	Salon	CD	12	550	475	561	102	Capture Hood	1.000	1.000	561
S-09	Salon	CD	12	400	537	403	101	Capture Hood	1.000	1.000	403
S-10	Salon	CD	12	400	486	401	100	Capture Hood	1.000	1.000	401
S-11	Hallway	CD	14	150	45	162	108	Capture Hood	1.000	1.000	162
	Totals:	**-**	**-**	**4000**	**4080**	**4056**	**101**	**-**	**-**	**-**	**-**

Fan

SYSTEM/UNIT: EF-01

Tested By: Clayton Nelson
Date: 1/20/2023

Design Airflow (CFM)	
Design Airflow	625
Design Grille Airflow	625

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	1/6
Submittal BHP	Not Provided

Design Static Pressures (in wg)	
Design External SP	0.3
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	Broad-Ocean
Motor Frame (tag)	Not Listed
Motor HP (tag)	1/6
Motor RPM (tag)	300-1750
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	2.2
Motor S.F. (tag)	Not Listed
Mtr % PF (tag)	Not Listed
Mtr % Eff. (tag)	Not Listed
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	Not Applicable
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-

Final Airflow (CFM)	
Actual Airflow	616
Actual Grille Airflow	616
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	Not Applicable

Unit Data	
Make (tag)	Greenheck
Model # (tag)	G-095-VG-1-17-X
Serial # (tag)	21076604
Unit Location	Roof
Unit Discharge	Upblast
Fan Service	Exhaust
Fan Type	Centrifugal (BI)
Fan Discharge	Upblast
Fan Arrangement	SWSI

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

Fan Data	
Actual Fan RPM/Speed	65%
Actual Motor RPM	Not Accessible
Speed Cont. Position	65%

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

Fan

SYSTEM/UNIT: EF-01

Tested By: Clayton Nelson
Date: 1/20/2023

Drive Data	
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
Corr. Nameplate Amps

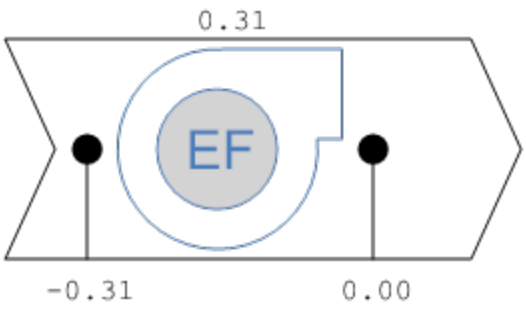
Make (tag) Photo:

Name: Make (tag).jpg
Captured: 12/30/2022 1:09 PM
Caption:

SYSTEM/UNIT: EF-01/Static Profile

Tested By: Clayton Nelson
Date: 1/20/2023

Static Pressure Profile



Fan

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	Office	CD	6	70	-	70	100	Capture Hood	0.532	1.000	132
E-02	Salon	CD	8	100	131	98	98	Capture Hood	1.000	1.000	98
E-03	Salon	CD	8	65	72	63	97	Capture Hood	1.000	1.000	63
E-04	Salon	CD	6	65	126	65	100	Capture Hood	1.000	1.000	65
E-05	Salon	CD	6	65	86	63	97	Capture Hood	1.000	1.000	63
E-06	Salon	CD	6	65	98	63	97	Capture Hood	1.000	1.000	63
E-07	Salon	CD	6	65	68	65	100	Capture Hood	1.000	1.000	65
E-08	Salon	CD	6	65	87	64	98	Capture Hood	1.000	1.000	64
E-09	Salon	CD	6	65	89	65	100	Capture Hood	1.000	1.000	65
	Totals:	**-**	**-**	**625**	**757**	**616**	**99**	**-**	**-**	**-**	**-**

Fan

SYSTEM/UNIT: EF-02

Tested By: Clayton Nelson
Date: 1/20/2023

Design Airflow (CFM)	
Design Airflow	930
Design Grille Airflow	930

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	0.3
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	Broad-Ocean
Motor Frame (tag)	Not Listed
Motor HP (tag)	1/4
Motor RPM (tag)	300-1750
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	2.85
Motor S.F. (tag)	Not Listed
Mtr % PF (tag)	Not Listed
Mtr % Eff. (tag)	Not Listed
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	Not Applicable
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-

Final Airflow (CFM)	
Actual Airflow	873
Actual Grille Airflow	873
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	Not Applicable

Unit Data	
Make (tag)	Greenheck
Model # (tag)	G-099-4-VG-1-19-X
Serial # (tag)	21076755
Unit Location	Roof
Unit Discharge	Upblast
Fan Service	Exhaust
Fan Type	Centrifugal (BI)
Fan Discharge	Upblast
Fan Arrangement	SWSI

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

Fan Data	
Actual Fan RPM/Speed	71%
Actual Motor RPM	Not Accessible
Speed Cont. Position	71%

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	Not Accessible
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	Not Accessible
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Not Applicable
Approx. BHP	

Fan

SYSTEM/UNIT: EF-02

Tested By: Clayton Nelson
Date: 1/20/2023

Drive Data	
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
Corr. Nameplate Amps

Make (tag) Photo:

Name: Make (tag).jpg
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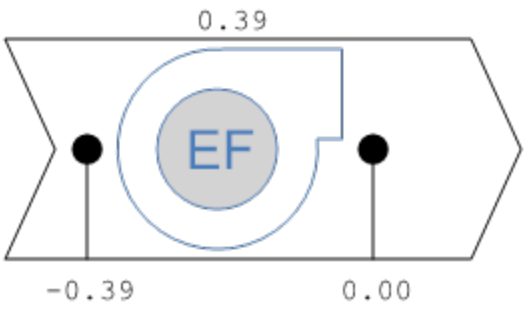
Caption:

SYSTEM/UNIT: EF-02/Static Profile

Tested By: Clayton Nelson
Date: 1/20/2023

Static Pressure Profile



Fan

EF-02 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	Salon	CD	6	65	143	68	105	Capture Hood	1.000	1.000	68
E-02	Salon	CD	6	65	111	65	100	Capture Hood	1.000	1.000	65
E-03	Salon	CD	6	65	135	66	102	Capture Hood	1.000	1.000	66
E-04	Salon	CD	6	65	109	63	97	Capture Hood	1.000	1.000	63
E-05	Restroom	CD	6	140	215	146	104	Capture Hood	1.000	1.000	146
E-06	Salon	CD	6	65	146	65	100	Capture Hood	1.000	1.000	65
E-07	Salon	CD	6	65	147	66	102	Capture Hood	1.000	1.000	66
E-08	Salon	CD	6	100	103	101	101	Capture Hood	1.000	1.000	101
E-09	Salon	CD	8	100	122	96	96	Capture Hood	1.000	1.000	96
E-10	Restroom	CD	6	140	111	137	98	Capture Hood	1.000	1.000	137
	Totals:	-	-	**870**	**1342**	**873**	**100**	-	-	-	-

Fan

SYSTEM/UNIT: EF-03

Tested By: Clayton Nelson
Date: 1/16/2023

Design Airflow (CFM)	
Design Airflow	820
Design Grille Airflow	880

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	1/6
Submittal BHP	Not Provided

Design Static Pressures (in wg)	
Design External SP	0.3
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	Broad-Ocean
Motor Frame (tag)	Not Listed
Motor HP (tag)	1/6
Motor RPM (tag)	300-1750
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	2.2
Motor S.F. (tag)	Not Listed
Mtr % PF (tag)	Not Listed
Mtr % Eff. (tag)	Not Listed
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	Not Applicable
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-

Final Airflow (CFM)	
Actual Airflow	881
Actual Grille Airflow	881
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	Not Applicable

Unit Data	
Make (tag)	Greenheck
Model # (tag)	G-095-VG-1-17-X
Serial # (tag)	21076788
Unit Location	Roof
Unit Discharge	Upblast
Fan Service	Exhaust
Fan Type	Centrifugal (BI)
Fan Discharge	Upblast
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	70%

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	Internal to ECM
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	1.7
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Not Applicable
Approx. BHP	

Fan

SYSTEM/UNIT: EF-03

Tested By: Clayton Nelson
Date: 1/16/2023

Drive Data	
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
Corr. Nameplate Amps

Make (tag) Photo:

Name: Make (tag).jpg
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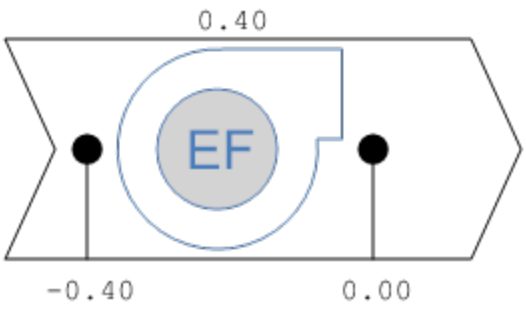
Caption:

SYSTEM/UNIT: EF-03/Static Profile

Tested By: Clayton Nelson
Date: 1/16/2023

Static Pressure Profile



Fan

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	Salon	CD	6	65	101	64	98	Capture Hood	1.000	1.000	64
E-02	Salon	CD	6	65	115	67	103	Capture Hood	1.000	1.000	67
E-03	Salon	CD	6	65	59	63	97	Capture Hood	1.000	1.000	63
E-04	Salon	CD	6	65	68	65	100	Capture Hood	1.000	1.000	65
E-05	Salon	CD	6	65	115	67	103	Capture Hood	1.000	1.000	67
E-06	Salon	CD	6	65	98	64	98	Capture Hood	1.000	1.000	64
E-07	Salon	CD	6	65	95	63	97	Capture Hood	1.000	1.000	63
E-08	Salon	CD	6	65	103	63	97	Capture Hood	1.000	1.000	63
E-09	Salon	CD	8	100	132	104	104	Capture Hood	1.000	1.000	104
E-10	Salon	CD	6	65	99	67	103	Capture Hood	1.000	1.000	67
E-11	Salon	CD	6	65	91	64	98	Capture Hood	1.000	1.000	64
E-12	Salon	CD	6	65	84	64	98	Capture Hood	1.000	1.000	64
E-13	Salon	CD	6	65	83	66	102	Capture Hood	1.000	1.000	66
	Totals:	-	-	**880**	**1243**	**881**	**100**	-	-	-	-

Fan

SYSTEM/UNIT: EF-04

Tested By: Clayton Nelson
Date: 1/16/2023

Design Airflow (CFM)	
Design Airflow	620
Design Grille Airflow	620

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	1/6
Submittal BHP	Not Provided

Design Static Pressures (in wg)	
Design External SP	0.3
Submittal Total SP	103.23

Motor Nameplate Data	
Motor Make (tag)	Broad-Ocean
Motor Frame (tag)	Not Listed
Motor HP (tag)	1/4
Motor RPM (tag)	300-1750
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	2.85
Motor S.F. (tag)	Not Listed
Mtr % PF (tag)	Not Listed
Mtr % Eff. (tag)	Not Listed
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	Not Applicable
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-

Final Airflow (CFM)	
Actual Airflow	640
Actual Grille Airflow	640
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	Not Applicable

Unit Data	
Make (tag)	Greenheck
Model # (tag)	G-099-4-VG-1-19-X
Serial # (tag)	21076775
Unit Location	Roof
Unit Discharge	Upblast
Fan Service	Exhaust
Fan Type	Centrifugal (BI)
Fan Discharge	Upblast
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	V/A Meter
Motor Volts 1	116
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	1.9
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Not Applicable
Approx. BHP	0.17

Fan

SYSTEM/UNIT: EF-04

Tested By: Clayton Nelson
Date: 1/16/2023

Drive Data	
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	
Corr. Nameplate Amps	2.8

Make (tag) Photo:

Name: Make (tag).jpg
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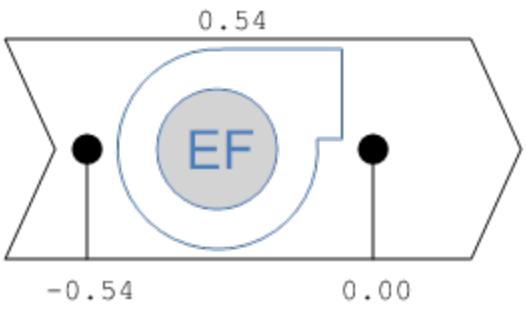
Caption:

SYSTEM/UNIT: EF-04/Static Profile

Tested By: Clayton Nelson
Date: 1/16/2023

Static Pressure Profile



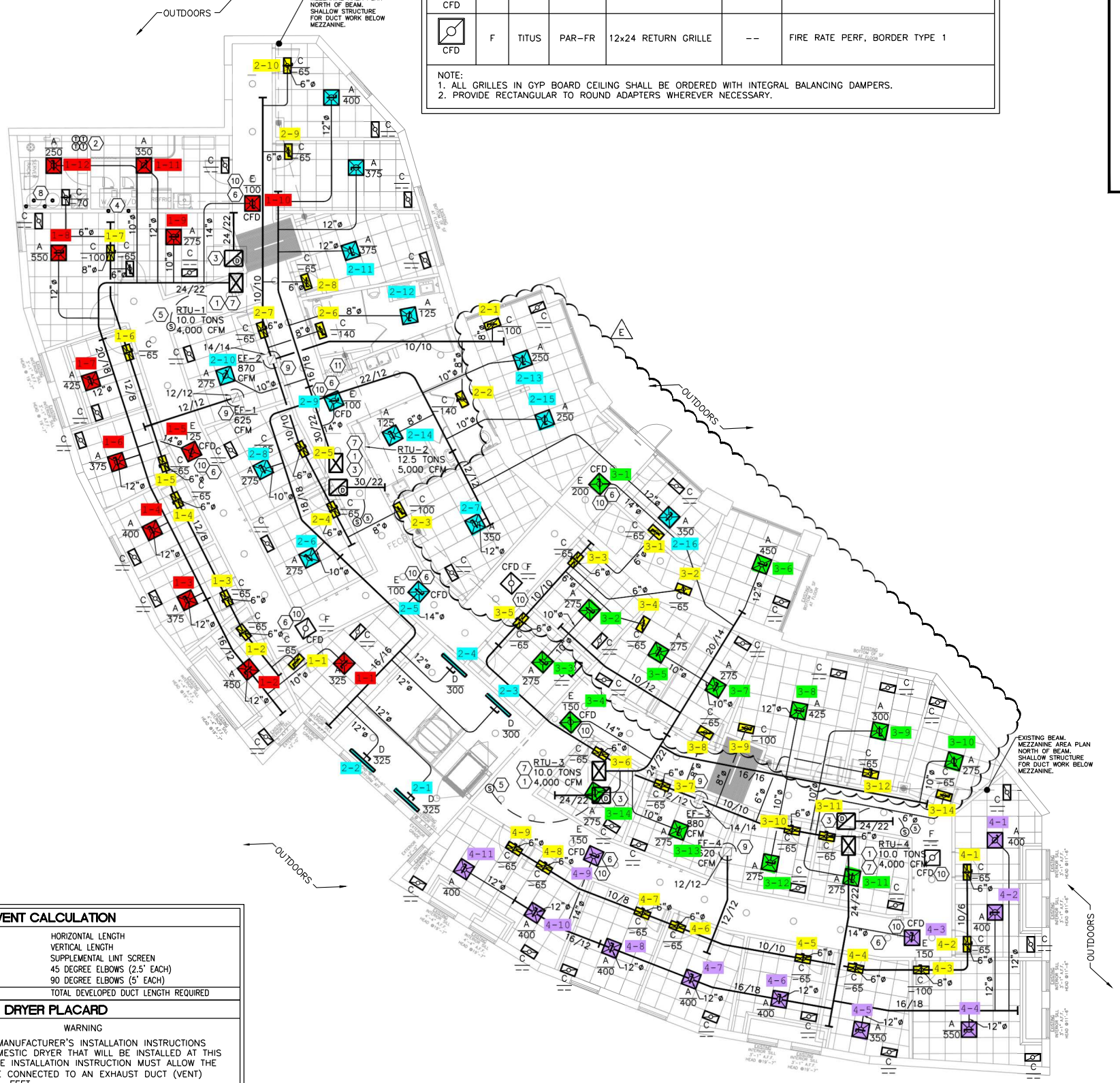
Fan

EF-04 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	Salon	CD	6	65	63	65	100	Capture Hood	1.000	1.000	65
E-02	Salon	CD	6	65	105	68	105	Capture Hood	1.000	1.000	68
E-03	Salon	CD	6	65	61	68	105	Capture Hood	1.000	1.000	68
E-04	Salon	CD	6	65	101	66	102	Capture Hood	1.000	1.000	66
E-05	Salon	CD	6	65	85	68	105	Capture Hood	1.000	1.000	68
E-06	Salon	CD	6	65	63	66	102	Capture Hood	1.000	1.000	66
E-07	Salon	CD	8	100	133	104	104	Capture Hood	1.000	1.000	104
E-08	Salon	CD	6	65	33	67	103	Capture Hood	1.000	1.000	67
E-09	Salon	CD	6	65	63	68	105	Capture Hood	1.000	1.000	68
	Totals:	**-**	**-**	**620**	**707**	**640**	**103**	**-**	**-**	**-**	**-**

CFD						
CFD	F	TITUS	PAR-FR	12x24 RETURN GRILLE	--	FIRE RATE PERF, BORDER TYPE 1

NOTE:
1. ALL GRILLES IN GYP BOARD CEILING SHALL BE ORDERED WITH INTEGRAL BALANCING DAMPERS.
2. PROVIDE RECTANGULAR TO ROUND ADAPTERS WHEREVER NECESSARY.



DRYER VENT CALCULATION

0'-0"	HORIZONTAL LENGTH
20'-0"	VERTICAL LENGTH
25'-0"	SUPPLEMENTAL LINT SCREEN
0	45 DEGREE ELBOWS (2.5' EACH)
0	90 DEGREE ELBOWS (5' EACH)
45'-0"	TOTAL DEVELOPED DUCT LENGTH REQUIRED

SAMPLE DRYER PLACARD

WARNING

:CK THE MANUFACTURER'S INSTALLATION INSTRUCTIONS
' ANY DOMESTIC DRYER THAT WILL BE INSTALLED AT THIS
ATION. THE INSTALLATION INSTRUCTION MUST ALLOW THE
ER TO BE CONNECTED TO AN EXHAUST DUCT (VENT)
T IS ____FEET.

'ER DUCT SHALL BE INSULATED.