Report By:
United Test & Balance Inc.
7013 Flagler Road,
Nordland, WA 98358.

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

Report: FINAL TAB REPORT

Function: Test, Adjust, & Balance

Date: 08/16/2023

PROJECT

07-31-23 SHAKE SHACK #1377 - LYNWOOD, WA (ALDERWOOD MALL) TAB, IAQ

18800 ALDERWOOD MALL PKWY

LYNWOOD, WA 98037

Client

Wilcox Construction

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.

Kitchen Exhaust Hood & Associated Fans

Each kitchen exhaust fan was measured at the hood filter bay utilizing a velocity matrix and a manufacturer's correction factor. Each filter velocity is multiplied by the manufacturer's corrected area. The sum of these readings equals the total flow of the exhaust fans. The total flow of the exhaust was then adjusted to within tolerance of the design flow. . Any EF's that fell outside of this 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.

NATIONAL TAB

AIR BALANCE SCHEDULE

UNIT	HVAC SUPPLY		HVAC RETURN		HVAC OUTDOOR		OA %		HOOD MAKE-UP		HOOD EXHAUST		GENERAL EXH.	
	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL
RTU-1	3100	3137	2100	1051	1000	2086	32.3%	66.5%						
RTU-2	4700	4869	2200	2600	2500	2269	53.2%	46.6%						
KEF-1											700	713		
KEF-2											700	699		
KEF-3											700	707		
KEF-4											700	707		
EF-1													300	313
TOTALS	7800	8006	4300	3651	3500	4355			0	0	2800	2826	300	313

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	3500	4355
TAL EXHAU	3100	3139
ET AIRFLO	400	1216

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H20)
FRONT	0.01
SIDE	0.01
REAR	0.02
AVERAGE	**0.0133**

FINAL CHECKS

ACTUAL NET AIRFLOW COINCIDES WITH DESIGN: ✓

MEASURED PRESSURES COINCIDES WITH ACTUAL NET AIRFLOW: ✓

PRESSURE FALLS WITHIN IMC TOLERANCE OF +/-0.02" W.C. ✓

NOTES:

SYSTEM/UNIT: RTU-01

Tested By: Jorge Acosta
Date: 8/4/2023

Design Airflow (CFM)	
Design Total	3100
Design Grille Total	3100
Design Return	2100
Design Min O/A	1000

Unit Design Data	
Submittal Make	CaptiveAire
Submittal Model #	CASRTU2-I.200-18-8T-DOAS
Submittal Airflow	-
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	3
Submittal BHP	Not Provided
Filter MERV Rating (Sched/Sub)	8

Design Static Pressures (in wg)	
Design Ext SP	1.72
Submittal Total SP	Not Listed
Submittal Clg Coil Δ SP	-

Filter Data	
Condition	Clean
Filter Type	Pleated
MERV Rating	4
Filter Size Set 1 (in)	16x20x2
# Filters Set 1	8
Filter Size Set 2 (in)	16x20x2
# Filters Set 2	4

Motor Nameplate Data	
Motor Make	TECO Westinhouse
Motor Frame	182T
Motor HP	3.00
Motor RPM	1755
Motor Volts	230
Motor Phase	3

Final Airflow (CFM)	
Actual Total CFM	3143
Actual Grille Total CFM	3143
Actual Return Air CFM	2092
Actual Min O/A CFM	1051
Fan CFM Test Method	Supply Outlet Total
OA Method/Instrument	Face Velocity / RVA
OA Ak (sq ft)	-
OA Damper Position	38% Open
RA Damper Position	62% Open

Unit Data	
Make (tag)	Captive Aire
Model # (tag)	CASRTU2-I.200-18-8T
Serial # (tag)	5592558
Location	Rooftop
Unit Discharge	Down
Cooling Coil Location	Drawthrough
Coil Area (sq ft)	8.7
Clg Coil Vel (FPM)	361
Fan Service	Supply
Fan Type	Centrif Air Foil
Fan Discharge	Horizonal
Fan Arrangement	SWSI

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

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

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	206
Motor Volts 2	206

SYSTEM/UNIT: RTU-01

Tested By: Jorge Acosta
Date: 8/4/2023

Motor Nameplate Data	
Motor Amps	8.6
Motor S.F.	1.15
Motor % PF	89.5
Motor % Eff.	91
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	206
Motor Amps 1	8.6
Motor Amps 2	9.4
Motor Amps 3	9.2
Operating HZ	67.00
Approx. BHP	2.7
Corr. Nameplate Amps	9.6
Starter Data	Internal to VFD
VFD Reference	Not Applicable

Make (tag) Photo:

Name: RTU-01 Name Plate.jpg
Captured: 8/4/2023 1:07 PM
Caption:

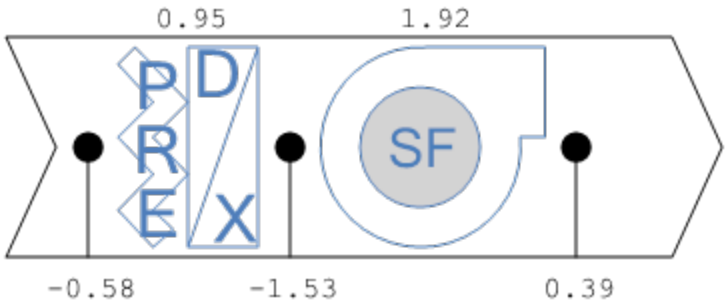
Log:

RTU-01	8/6/2023	William Clayton	There are no condensate P-Traps installed on the CaptiveAire DOAS. This is preventing the water from escaping. TYPICAL BOTH RTUs

SYSTEM/UNIT: RTU-01/Static Profile

Tested By: Jorge Acosta
Date: 8/4/2023

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	100 Order	SW	12/8	400	311	401	100	RVA	0.400	0.500	1003
S-02	100 Order	SW	12/6	330	280	323	98	RVA	0.400	0.500	808
S-03	101 Dining	SW	12/8	400	292	408	102	RVA	0.400	0.500	1020
S-04	101 Dining	SW	12/6	340	250	373	110	RVA	0.400	0.500	933
S-05	101 Dining	SW	12/8	400	256	408	102	RVA	0.400	0.500	1020
S-06	101 Dining	SW	12/6	340	219	333	98	RVA	0.400	0.500	833
S-07	101 Dining	SW	12/6	340	235	343	101	RVA	0.400	0.500	858
S-08	101 Dining	SW	12/8	400	266	402	101	RVA	0.400	0.500	1005
S-09	106 B Mens RR	CD	6	75	85	76	101	Capture Hood	1.000	1.000	76
S-10	106 A Womens RR	CD	6	75	87	76	101	Capture Hood	1.000	1.000	76
	Totals:	-	-	**3100**	**2281**	**3143**	**101**	-	-	-	-

SYSTEM/UNIT: RTU-02

Tested By: Jorge Acosta
Date: 8/4/2023

Design Airflow (CFM)	
Design Total	4500
Design Grille Total	4700
Design Return	2200
Design Min O/A	2500

Unit Design Data	
Submittal Make	CaptiveAire
Submittal Model #	CASRTU3-I.400-24-20T-DOAS
Submittal Airflow	-
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	7.5
Submittal BHP	Not Provided
Filter MERV Rating (Sched/Sub)	8

Design Static Pressures (in wg)	
Design Ext SP	1
Submittal Total SP	Not Listed
Submittal Clg Coil Δ SP	-

Filter Data	
Condition	Clean
Filter Type	Pleated
MERV Rating	8
Filter Size Set 1 (in)	20x25x2
# Filters Set 1	4
Filter Size Set 2 (in)	20x25x2
# Filters Set 2	-4

Motor Nameplate Data	
Motor Make	TECO Westinhouse
Motor Frame	213T
Motor HP	7.50
Motor RPM	1755
Motor Volts	230
Motor Phase	3

Final Airflow (CFM)	
Actual Total CFM	4869
Actual Grille Total CFM	4869
Actual Return Air CFM	2269
Actual Min O/A CFM	2600
Fan CFM Test Method	Supply Outlet Total
OA Method/Instrument	Face Velocity / RVA
OA Ak (sq ft)	-
OA Damper Position	50% Open
RA Damper Position	50% Open

Unit Data	
Make (tag)	Captive Aire
Model # (tag)	CASRTU3-I.400-24-20T
Serial # (tag)	5592558
Location	Rooftop
Unit Discharge	Down
Cooling Coil Location	Drawthrough
Coil Area (sq ft)	13.5
Clg Coil Vel (FPM)	361
Fan Service	Supply
Fan Type	Centrif Air Foil
Fan Discharge	Horizonal
Fan Arrangement	SWSI

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

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

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	205
Motor Volts 2	205

SYSTEM/UNIT: RTU-02

Tested By: Jorge Acosta
Date: 8/4/2023

Motor Nameplate Data	
Motor Amps	19.1
Motor S.F.	1.15
Motor % PF	89.5
Motor % Eff.	91
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	295
Motor Amps 1	17.1
Motor Amps 2	17.1
Motor Amps 3	17.2
Operating HZ	42.00
Approx. BHP	6.0
Corr. Nameplate Amps	21.4
Starter Data	Internal to VFD
VFD Reference	Not Applicable

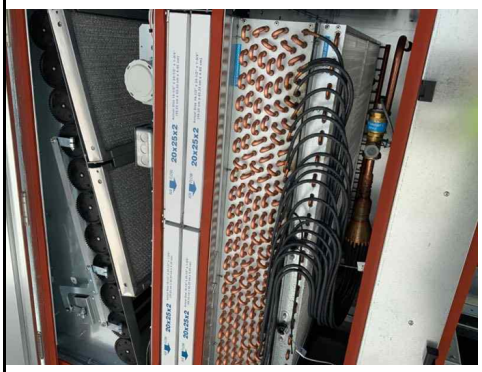
Submittal Model # Photo:

Name: Submittal Model #.jpg
Captured: 8/3/2023 12:00 PM
Caption:

SYSTEM/UNIT: RTU-02

Tested By: Jorge Acosta
Date: 8/4/2023

Condition Photo:



Name: Condition.jpg
Captured: 8/3/2023 12:05 PM
Caption: RTU-02. New Filters

Motor Make Photo:

Name: Motor Make.jpg
Captured: 8/3/2023 12:10 PM
Caption:

SYSTEM/UNIT: RTU-02

Tested By: Jorge Acosta
Date: 8/4/2023

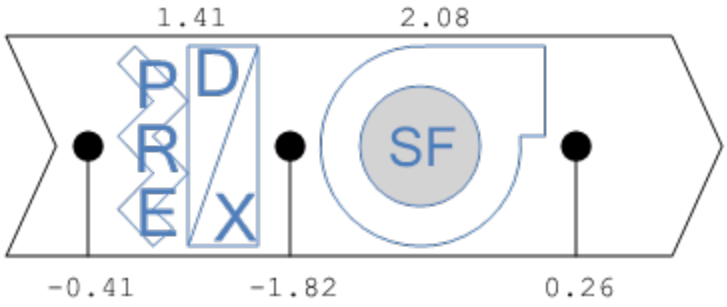
Model # (tag) Photo:

Name: Model # (tag).jpg
Captured: 8/3/2023 12:01 PM
Caption: RTU-02

SYSTEM/UNIT: RTU-02/Static Profile

Tested By: Jorge Acosta
Date: 8/4/2023

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	105 Open Kitchen	CD	12	580	624	580	100	Capture Hood	1.000	1.000	580
S-02	105 Open Kitchen	CD	12	580	607	590	102	Capture Hood	1.000	1.000	590
S-03	105 Open Kitchen	CD	12	580	549	600	103	Capture Hood	1.000	1.000	600
S-04	105 Open Kitchen	CD	12	600	513	629	105	Capture Hood	1.000	1.000	629
S-05	105 Open Kitchen	CD	12	600	506	619	103	Capture Hood	1.000	1.000	619
S-06	103 Back Kitchen	CD	12	600	373	645	108	Capture Hood	1.000	1.000	645
S-07	103 Back Kitchen	CD	12	580	497	620	107	Capture Hood	1.000	1.000	620
S-08	103 Back Kitchen	CD	12	580	667	586	101	Capture Hood	1.000	1.000	586
	Totals:	**-**	**-**	**4700**	**4336**	**4869**	**104**	**-**	**-**	**-**	**-**

SYSTEM/UNIT: EF-01

Tested By: Jorge Acosta
Date: 8/4/2023

Design Airflow (CFM)	
Design Airflow	300
Design Grille Airflow	300

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	-
Submittal Airflow	-
Sched./Sub. Volts	120
Sched./Sub. Phase	1
Sched./Sub. HP	1/8
Submittal BHP	Not Provided

Design Static Pressures (in wg)	
Design External SP	0.5
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	McMillan
Motor Frame (tag)	Not Listed
Motor HP (tag)	1/8
Motor RPM (tag)	1550
Motor Volts (tag)	120
Motor Phase (tag)	1
Motor Amps (tag)	1.6
Motor S.F. (tag)	1
Mtr % PF (tag)	Not Listed
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	-

Final Airflow (CFM)	
Actual Airflow	310
Actual Grille Airflow	310
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	Not Applicable

Unit Data	
Make (tag)	Greenheck
Model # (tag)	G-095-D-8-1-17-X
Serial # (tag)	21486421
Unit Location	Roof
Unit Discharge	Downward
Fan Service	Exhaust
Fan Type	Centrifugal
Fan Discharge	Downblast
Fan Arrangement	SWSI

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

Fan Data	
Actual Fan RPM/Speed	High Speed
Actual Motor RPM	Not Accessible
Speed Cont. Position	-

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	118
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	1.6
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Internal to ECM
Approx. BHP	0.12

SYSTEM/UNIT: EF-01

Tested By: Jorge Acosta
Date: 8/4/2023

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	1.6

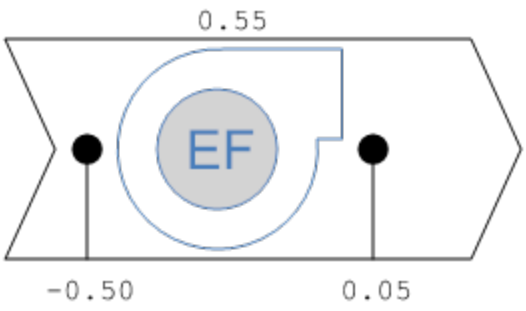
Motor Make (tag) Photo:

Name: Motor Make (tag).jpg
Captured: 8/3/2023 1:17 PM
Caption: EF-01

SYSTEM/UNIT: EF-01/Static Profile

Tested By: Steve Burns
Date: 8/4/2023

Static Pressure Profile



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	106 B Mens RR	CD	8/8	150	315	160	107	Capture Hood	1.000	1.000	160
E-02	106 A Womens RR	CD	8/8	150	288	150	100	Capture Hood	1.000	1.000	150
	Totals:	**-**	**-**	**300**	**603**	**310**	**103**	**-**	**-**	**-**	**-**

SYSTEM/UNIT: KEF-01

Tested By: Jorge Acosta
Date: 8/4/2023

Design Airflow (CFM)	
Design Airflow	700
Design Grille Airflow	Not Applicable

Unit Design Data	
Submittal Make	CaptiveAire
Submittal Model #	DU33HFA
Submittal Airflow	700
Sched./Sub. Volts	115
Sched./Sub. Phase	1
Sched./Sub. HP	.33
Submittal BHP	.2770

Design Static Pressures (in wg)	
Design External SP	1.0
Submittal Total SP	1.00

Motor Nameplate Data	
Motor Make (tag)	Talco Green
Motor Frame (tag)	Not Listed
Motor HP (tag)	0.5
Motor RPM (tag)	1800
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	6.3
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)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Final Airflow (CFM)	
Actual Airflow	713
Actual Grille Airflow	Not Applicable
Fan CFM Test Method	See Kitchen Hood Sheet
Test Method Ak (sq ft)	Not Applicable

Unit Data	
Make (tag)	CaptiveAire
Model # (tag)	DU50HFA
Serial # (tag)	5787990
Unit Location	Roof
Unit Discharge	Upward
Fan Service	Exhaust
Fan Type	Centrifugal
Fan Discharge	Upblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Listed
Submittal Fan RPM	1659

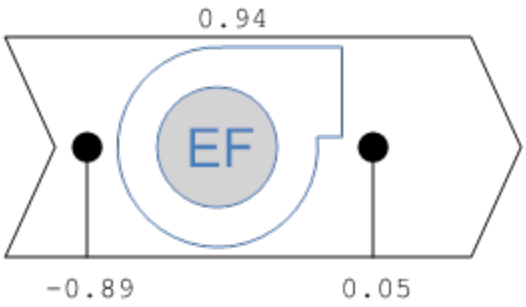
Fan Data	
Actual Fan RPM/Speed	49%
Actual Motor RPM	Not Accessible
Speed Cont. Position	Not Applicable

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	118
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	3.8
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Internal to ECM
Approx. BHP	0.31
Corr. Nameplate Amps	6.1

SYSTEM/UNIT: KEF-01/Static Profile

Tested By: Jorge Acosta
Date: 8/4/2023

Static Pressure Profile



SYSTEM/UNIT: KEF-01/Hood-01

Tested By: Jorge Acosta
Date: 8/4/2023

Design Airflow (CFM)	
Design Exhaust CFM	700
Halton Design SP	Not Applicable

Final Airflow (CFM)	
Actual Exhaust CFM	713
Halton Actual SP	Not Applicable

Kitchen Hood Information	
Service	Fryer
Manufacturer	CaptiveAire
Model Number	3650 BD-2
Serial Number	5787990
Test Method	Filter Velocity

KEF-01/Hood-01 Exhaust Filter Summary

System/Unit	Size	Type	Ak	Reading 2	Reading 1	FPM	Instrument	CFM
Filter-01	16x20	Baffle	2.08		165	165	Velgrid	0
Filter-02	16x20	Baffle	2.08		178	178	Velgrid	370
Totals:	-	-	-	-	-	-	-	**370**

SYSTEM/UNIT: KEF-02

Tested By: Jorge Acosta
Date: 8/4/2023

Design Airflow (CFM)	
Design Airflow	700
Design Grille Airflow	Not Applicable

Unit Design Data	
Submittal Make	CaptiveAire
Submittal Model #	DU33HFA
Submittal Airflow	700
Sched./Sub. Volts	115
Sched./Sub. Phase	1
Sched./Sub. HP	0.33
Submittal BHP	0.2780

Design Static Pressures (in wg)	
Design External SP	1.00
Submittal Total SP	1.00

Motor Nameplate Data	
Motor Make (tag)	Talco Green
Motor Frame (tag)	Not Listed
Motor HP (tag)	0.5
Motor RPM (tag)	1800
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	6.3
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)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Final Airflow (CFM)	
Actual Airflow	699
Actual Grille Airflow	Not Applicable
Fan CFM Test Method	See Kitchen Hood Sheet
Test Method Ak (sq ft)	Not Applicable

Unit Data	
Make (tag)	CaptiveAire
Model # (tag)	DU50HFA
Serial # (tag)	5787990
Unit Location	Roof
Unit Discharge	Upward
Fan Service	Exhaust
Fan Type	Centrifugal
Fan Discharge	Upblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Listed
Submittal Fan RPM	1659

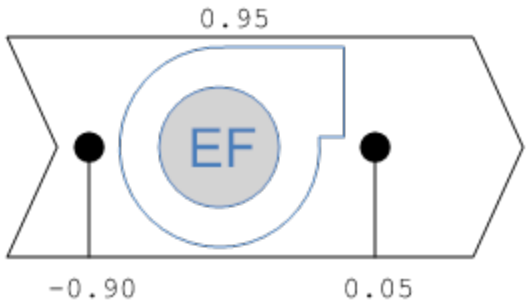
Fan Data	
Actual Fan RPM/Speed	49%
Actual Motor RPM	Not Accessible
Speed Cont. Position	Not Applicable

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	118
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	3.8
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Internal to ECM
Approx. BHP	0.31
Corr. Nameplate Amps	6.1

SYSTEM/UNIT: KEF-02/Static Profile

Tested By: Steve Burns
Date: 8/4/2023

Static Pressure Profile



SYSTEM/UNIT: KEF-02/Hood-02

Tested By: Jorge Acosta
Date: 8/4/2023

Design Airflow (CFM)	
Design Exhaust CFM	700
Halton Design SP	Not Applicable

Final Airflow (CFM)	
Actual Exhaust CFM	699
Halton Actual SP	Not Applicable

Kitchen Hood Information	
Service	Fryer
Manufacturer	CaptiveAire
Model Number	3650 BD-2
Serial Number	5787990
Test Method	Filter Velocity

KEF-02/Hood-02 Exhaust Filter Summary

System/Unit	Size	Type	Ak	Reading 2	Reading 1	FPM	Instrument	CFM
Filter-01	16x20	Baffle	2.08		164	164	Vevlgrid	341
Filter-02	16x20	Baffle	2.08		172	172	Vevlgrid	358
Totals:	-	-	-	-	-	-	-	**699**

SYSTEM/UNIT: KEF-03

Tested By: Jorge Acosta
Date: 8/4/2023

Design Airflow (CFM)	
Design Airflow	700
Design Grille Airflow	Not Applicable

Unit Design Data	
Submittal Make	CaptiveAire
Submittal Model #	DU33HFA
Submittal Airflow	700
Sched./Sub. Volts	115
Sched./Sub. Phase	1
Sched./Sub. HP	0.33
Submittal BHP	0.277

Design Static Pressures (in wg)	
Design External SP	1.00
Submittal Total SP	1.00

Motor Nameplate Data	
Motor Make (tag)	Talco Green
Motor Frame (tag)	Not Listed
Motor HP (tag)	0.5
Motor RPM (tag)	1800
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	6.3
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)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Final Airflow (CFM)	
Actual Airflow	707
Actual Grille Airflow	Not Applicable
Fan CFM Test Method	See Kitchen Hood Sheet
Test Method Ak (sq ft)	Not Applicable

Unit Data	
Make (tag)	CaptiveAire
Model # (tag)	DU50HFA
Serial # (tag)	5787990
Unit Location	Roof
Unit Discharge	Upward
Fan Service	Exhaust
Fan Type	Centrifugal
Fan Discharge	Upblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Listed
Submittal Fan RPM	1659

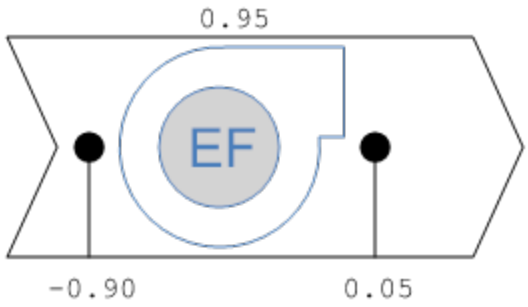
Fan Data	
Actual Fan RPM/Speed	51%
Actual Motor RPM	Not Accessible
Speed Cont. Position	Not Applicable

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	118
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	3.8
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Internal to ECM
Approx. BHP	0.31
Corr. Nameplate Amps	6.1

SYSTEM/UNIT: KEF-03/Static Profile

Tested By: Jorge Acosta
Date: 8/4/2023

Static Pressure Profile



SYSTEM/UNIT: KEF-03/Hood-03

Tested By: Jorge Acosta
Date: 8/4/2023

Design Airflow (CFM)	
Design Exhaust CFM	700
Halton Design SP	Not Applicable

Final Airflow (CFM)	
Actual Exhaust CFM	707
Halton Actual SP	Not Applicable

Kitchen Hood Information	
Service	Fryer
Manufacturer	CaptiveAire
Model Number	3650 BD-2
Serial Number	5787990
Test Method	Filter Velocity

KEF-03/Hood-03 Exhaust Filter Summary

System/Unit	Size	Type	Ak	Reading 2	Reading 1	FPM	Instrument	CFM
Filter-01	16x20	Baffle	2.08		166	166	Vevlgrid	345
Filter-02	16x20	Baffle	2.08		174	174	Vevlgrid	362
Totals:	-	-	-	-	-	-	-	**707**

SYSTEM/UNIT: KEF-04

Tested By: Jorge Acosta
Date: 8/4/2023

Design Airflow (CFM)	
Design Airflow	700
Design Grille Airflow	Not Applicable

Unit Design Data	
Submittal Make	CaptiveAire
Submittal Model #	DU33HFA
Submittal Airflow	700
Sched./Sub. Volts	115
Sched./Sub. Phase	1
Sched./Sub. HP	0.33
Submittal BHP	0.277

Design Static Pressures (in wg)	
Design External SP	1.00
Submittal Total SP	1.00

Motor Nameplate Data	
Motor Make (tag)	Talco Green
Motor Frame (tag)	Not Listed
Motor HP (tag)	0.5
Motor RPM (tag)	1800
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	6.3
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)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Final Airflow (CFM)	
Actual Airflow	707
Actual Grille Airflow	Not Applicable
Fan CFM Test Method	See Kitchen Hood Sheet
Test Method Ak (sq ft)	Not Applicable

Unit Data	
Make (tag)	CaptiveAire
Model # (tag)	DU50HFA
Serial # (tag)	5787990
Unit Location	Roof
Unit Discharge	Upward
Fan Service	Exhaust
Fan Type	Centrifugal
Fan Discharge	Upblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Listed
Submittal Fan RPM	1659

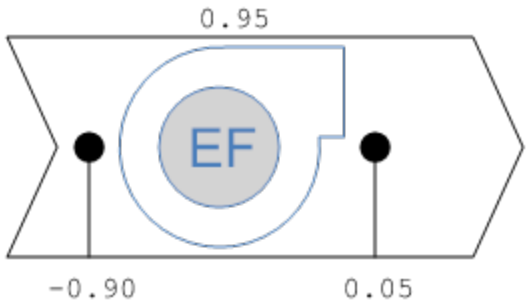
Fan Data	
Actual Fan RPM/Speed	51%
Actual Motor RPM	Not Accessible
Speed Cont. Position	Not Applicable

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	118
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	3.8
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Internal to ECM
Approx. BHP	0.31
Corr. Nameplate Amps	6.1

SYSTEM/UNIT: KEF-04/Static Profile

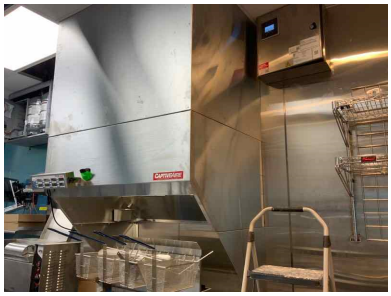
Tested By: Steve Burns
Date: 8/4/2023

Static Pressure Profile



SYSTEM/UNIT: KEF-04/Hood-04

Tested By: Jorge Acosta
Date: 8/4/2023



Design Airflow (CFM)	
Design Exhaust CFM	700
Halton Design SP	Not Applicable

Final Airflow (CFM)	
Actual Exhaust CFM	707
Halton Actual SP	Not Applicable

Kitchen Hood Information	
Service	Fryer
Manufacturer	CaptiveAire
Model Number	3650 BD-2
Serial Number	5787990
Test Method	Filter Velocity

KEF-04/Hood-04 Exhaust Filter Summary

System/Unit	Size	Type	Ak	Reading 2	Reading 1	FPM	Instrument	CFM
Filter-01	16x20	Baffle	2.08		174	174	Vevlgrid	362
Filter-02	16x20	Baffle	2.08		166	166	Vevlgrid	345
Totals:	-	-	-	-	-	-	-	**707**

SYSTEM/UNIT: REF-01

Tested By: Jorge Acosta
Date: 8/4/2023

Design Airflow (CFM)	
Design Airflow	2600
Design Grille Airflow	2600

Unit Design Data	
Submittal Make	Not Provided
Submittal Model #	-
Submittal Airflow	-
Sched./Sub. Volts	120
Sched./Sub. Phase	1
Sched./Sub. HP	1/2
Submittal BHP	Not Provided

Design Static Pressures (in wg)	
Design External SP	0.5
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	Vari-Green
Motor Frame (tag)	Not Listed
Motor HP (tag)	3/4
Motor RPM (tag)	1725
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	8.8
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	-

Final Airflow (CFM)	
Actual Airflow	1505
Actual Grille Airflow	1505
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	Not Applicable

Unit Data	
Make (tag)	Greenheck
Model # (tag)	G-180-7-VG-1-30-X
Serial # (tag)	21818129
Unit Location	Roof
Unit Discharge	Downward
Fan Service	Exhaust
Fan Type	Centrifugal
Fan Discharge	Downblast
Fan Arrangement	SWSI

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

Fan Data	
Actual Fan RPM/Speed	1800
Actual Motor RPM	1800
Speed Cont. Position	10.0

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	118
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	5.5
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Internal to ECM
Approx. BHP	0.48

SYSTEM/UNIT: REF-01

Tested By: Jorge Acosta
Date: 8/4/2023

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	8.6

Motor Make (tag) Photo:

Name: Motor Make (tag).jpg
Captured: 8/3/2023 1:20 PM
Caption: REF-01

Make (tag) Photo:

Name: Make (tag).jpg
Captured: 8/3/2023 1:12 PM
Caption: REF-01

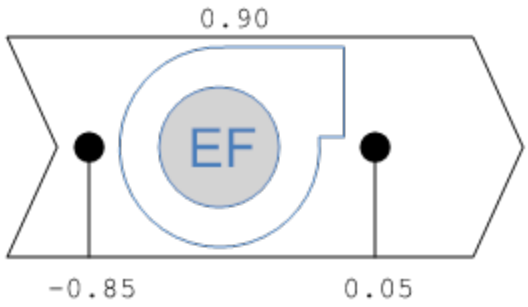
Log:

REF-01	8/6/2023	William Clayton	The REF is to operate when the DOAS go into economizer. There is currently no controls and the REF runs continuously.
REF-01	8/6/2023	William Clayton	Fan is operating at 58% of design on high speed. There is flex on the inlet of the fan that is kinked, restricting the airflow.

SYSTEM/UNIT: REF-01/Static Profile

Tested By: Steve Burns
Date: 8/3/2023

Static Pressure Profile



REF-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	103 Back Kitchen	CD	22/22	2600	1505	1505	58	Capture Hood	1.000	1.000	1505
	Totals:	**-**	**-**	**2600**	**1505**	**1505**	**58**	**-**	**-**	**-**	**-**

SYSTEM/UNIT: FCU-01

Tested By: Jorge Acosta
Date: 8/4/2023

Design Airflow (CFM)	
Design Total CFM (Sched)	420
Submittal Total CFM (Submittal)	Not Provided
Design Grille CFM	420
Design Return CFM	380
Design Min O/A	40

Unit Design Data	
Make (Submittal)	Not Provided
Model # (Submittal)	Not Provided
Volts (Sched/Sub)	208
Phase (Sched/Sub)	1
HP (Sched/Sub)	0.061
BHP (Submittal)	Not Provided
Filter MERV Rating (Sched/Sub)	Not Listed

Design Static Pressures (in wg)	
External SP (Sched/Subs)	0.03
Total SP (Submittal)	Not Provided
Clg Coil Δ SP (Submittal)	Not Provided

Filter Data	
Condition	Clean
Filter Type	Washable
MERV Rating	N/A
Filter Size	15X15
# Filters	1

Motor Nameplate Data	
Motor Type	Embedded
Motor Volts (tag)	208
Motor Phase (tag)	1
Motor Amps (tag)	1.65
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive / Embedded

Final Airflow (CFM)	
Actual Total CFM	417
Total CFM Test Method	Return+OA
Actual Grille Total	417
Actual Return Air	381
Actual Min O/A	36
OA Damper Position	Not Applicable

Unit Data	
Make (tag)	Carrier
Model # (tag)	40MBCQ18-3
Serial # (tag)	0823V30508
Location	Ceiling
Unit Discharge	Horizontal
Cooling Coil Location	Unit/Drawthru
Coil Area (sq ft)	Not Accessible
Clg Coil Vel (FPM)	Not Accessible

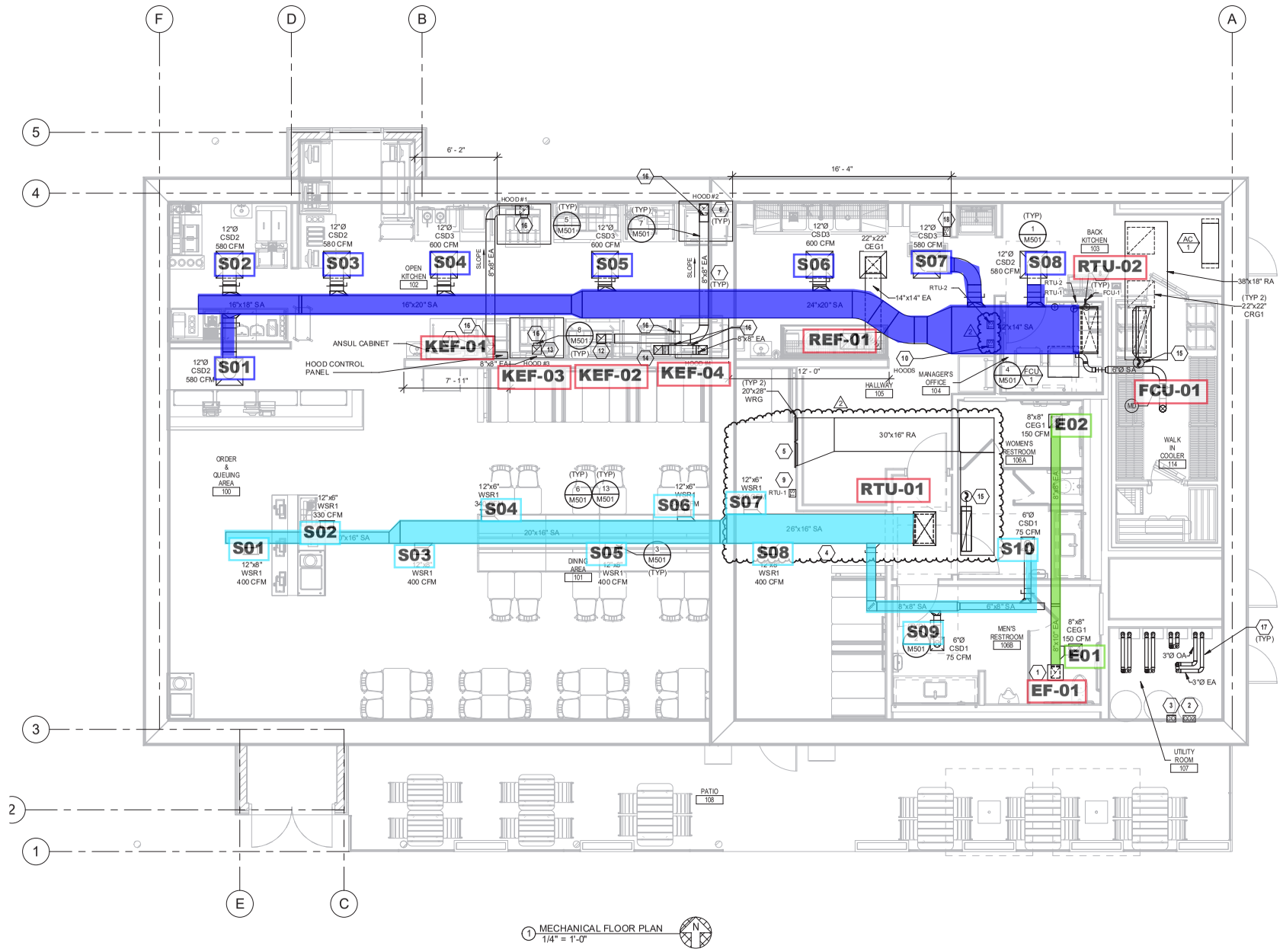
Fan Design Data	
Fan RPM (Submittal)	Not Provided
Motor RPM (Submittal)	Not Provided

Fan Data	
Service	Supply
Type	Centrifugal (FC)
Fan Discharge	Horizontal
Arrangement	SWSI
Fan Speed	High

Electrical Data	
Measurement Method	V/A Meter
Motor Volts T1-T2	210
Motor Amps T1	1.3

FCU-01 Return Inlet Summary

System/Unit	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
R-01	RG	14/14	380	381	381	100	Velgrid	1.090	1.360	350
Totals:	**-**	**-**	**380**	**381**	**381**	**100**	**-**	**-**	**-**	**-**


F
D
B
A
5
4
3
2
1
E
C
S01
S02
S03
S04
S05
S06
S07
S08
S09
S10
KEF-01
KEF-02
KEF-03
KEF-04
REF-01
RTU-01
RTU-02
FCU-01
E01
E02
EF-01
6' - 2"
16' - 4"
7' - 11"
12' - 0"
16"x18" SA
16"x20" SA
24"x20" SA
14"x14" EA
30"x16" RA
38"x18" RA
(TYP 2) 22"x22" CRG1
ANSUL CABINET
HOOD CONTROL PANEL
OPEN KITCHEN 102
ORDER & QUEUING AREA 100
DINING AREA 101
HALLWAY 105
MANAGER'S OFFICE 104
WOMEN'S RESTROOM 106A
MEN'S RESTROOM 106B
BACK KITCHEN 103
WALK IN COOLER 114
UTILITY ROOM 107
PATIO 108
1 MECHANICAL FLOOR PLAN
1/4" = 1'-0"