Report By:

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

NATIONAL TAB INTELLIGENCE

Report: CERTIFIED TAB REPORT

Function: Test, Adjust, & Balance

Date: 11/18/2024

Completed By: National TAB

PROJECT

AGRIHOUSE (SANTA CLARA, CA)

70 N WINCHESTER BLVD.

SANTA CLARA, CA 95050

Client

Martinico & Sons, Inc.

1776 S. 7th St.

San Jose, CA 95112

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Project: AGRIHOUSE (SANTA CLARA, CA)

Table Of Contents

Section	Page #
Certification Page	3
Summary	4
Split Sys Furnace	5
FAN - Exhaust	9
Abbreviations	11
Equipment List	12
GRD Layout	13

CERTIFICATION

PROJECT: AGRIHOUSE - SANTA CLARA, CA

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.

NEBB TAB FIRM:	National TAB - Kansas City
REGISTRATION NO:	3768
CERTIFIED BY:	Will Turnbough
DATE:	10/28/2024

Submitted and Certified by:

NEBB TAB FIRM:	National TAB - Kansas City
TAB PROFESSIONAL:	Will Turnbough
REGISTRATION NO:	CP-24289
CERTIFICATION EXP:	12/31/2024

NATIONAL TAB - KANSAS CITY
NEBB
WILLIAM M. TURNBOUGH
CERTIFICATION
3768
Exp. 12/31/24
Air and Hydronic Testing

Project Summary

AHU's w/ Diffusers
Each of the AHU's were measured at their terminal devices or via traverse to establish a total flow for that unit. Each AHU was adjusted to within tolerance of the engineer's design flow. Each outlet was then adjusted to within tolerance of the design flow. If provided with outside air, the flow was measured via traverse. 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.

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Project: AGRIHOUSE (SANTA CLARA, CA)

System/Unit: Split Sys Furnace

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Asset: IU-1 AREA:PREP/SKULLERY

Unit Data		
	Design	**Actual**
MFG	NA	MITSUBISHI
Model Num	NA	PEAD-A24AA8
Serial Num	-	33R02287
Configuration	HORIZONTAL	HORIZONTAL
Filter Size Size 1	-	9.5X43X2

Motor Data		
	Design	**Actual**
Motor MFG	-	NL
Frame	-	NL
Horsepower	-	0.162
Motor Rpm	-	NL
Phase	1	1
Voltage	208	208
Amperage	-	1.82

Test Data		
	Design	**Actual**
SF CFM	600	564
Motor Speed SetPt	-	4
RL Voltage	-	208
RL Amperage	-	1.1
RA CFM	465	427
OA CFM	135	137

Performance Data		
	Design	**Actual**
Suction ESP	-	-0.11"
Discharge ESP	-	0.15"
Total ESP	0.20	0.26"

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Project:AGRIHOUSE (SANTA CLARA, CA)

Split Sys Furnace

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Diffuser Supply (GRD)

IU-1/PREP/SKULLERY

Asset						
Asset Name	**Location**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
IU-1-SGRD1	PREP	10	300	276	276	92.0
IU-1-SGRD2	PREP	10	300	288	288	96.0
Total			600	564	564	94%

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Project: AGRIHOUSE (SANTA CLARA, CA)

System/Unit: Split Sys Furnace

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Asset: IU-2 AREA:SERVICE/SEATING

Unit Data		
	Design	**Actual**
MFG	NA	MITSUBISHI
Model Num	NA	PEAD-A42AA7
Serial Num	-	31R02743
Configuration	HORIZONTAL	HORIZONTAL
Filter Size Size 1	-	7.75X53.5X2

Motor Data		
	Design	**Actual**
Motor MFG	-	NL
Frame	-	NL
Horsepower	-	0.327
Motor Rpm	-	NL
Phase	1	1
Voltage	208	208
Amperage	-	2.8

Test Data		
	Design	**Actual**
SF CFM	1320	1410
Motor Speed SetPt	-	3
RL Voltage	-	208
RL Amperage	-	1.53
RA CFM	1125	1217
OA CFM	195	193

Performance Data		
	Design	**Actual**
Suction ESP	-	-0.21"
Discharge ESP	-	0.29"
Total ESP	0.40	0.50"

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Split Sys Furnace

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Diffuser Supply (GRD)

IU-2/SERVICE/SEATING

Asset						
Asset Name	**Location**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
IU-2-SGRD1	SERVICE	12X4	165	197	176	106.7
IU-2-SGRD2	SERVICE	12X4	165	276	180	109.1
IU-2-SGRD3	SERVICE	12X4	165	194	174	105.5
IU-2-SGRD4	SERVICE	12X4	165	354	177	107.3
IU-2-SGRD5	SEATING	12X4	165	198	166	100.6
IU-2-SGRD6	SEATING	12X4	165	235	181	109.7
IU-2-SGRD7	SEATING	12X4	165	356	175	106.1
IU-2-SGRD8	SEATING	12X4	165	267	181	109.7
Total			1320	2077	1410	106.82%

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Project: AGRIHOUSE (SANTA CLARA, CA)

System/Unit: FAN - Exhaust

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Asset: EF1 AREA:PREP/SERVICE/SEATING

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	CSP-A710-QD
Serial Num	-	23212402
Type	INLINE	INLINE

Test Data		
	Design	**Actual**
CFM	350	334
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	0.61	0.67"

Motor Data		
	Design	**Actual**
Motor MFG	-	NL
Frame	-	NL
Horsepower	0.25	0.25
Motor Rpm	1080	1080
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	4.9
Service Factor	-	NL

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FAN - Exhaust

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Diffuser Ret/Exh (GRD)

EF1/PREP/SERVICE/SEATING

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
EF1-EGRD1	PREP	EG-1	10X6	135	1	175	147	147	108.9
EF1-EGRD2	SERVICE	EG-1	10X6	135	1	117	123	123	91.1
EF1-EGRD3	SEATING	EG-2	10X6	60	1	67	64	64	106.7
Total				330		359	334	334	101.21%

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Abbreviation List

A = Area (ft^2)	S.F. = Service Factor
AHU = Air Handling Unit	SF = Supply Fan
A_k = Effective Area	SP = Static Pressure
BHP = Brake Horsepower (IP) HP	SR = Supply Register
Btu = British Thermal Unit	T = Temperature
Btu/h = Btuh = BTUH = BTU/Hour	T_{ma} = Mixed Air Temperature
CL = Center Distance (used in belt formula)	T_{oa} = Outside Air Temperature
CD = Ceiling Diffuser	T_{ra} = Return Air Temperature
CF = Correction Factor	H = Head (in wc, ft wc, psi)
CFM = Volumetric Flow: Cubic Feet Per Minute	h = Enthalpy
CO2 = Carbon Dioxide	HP = Horsepower
CO = Carbon Monoxide	hr = Hour
C_v = Flow Constant	K_v = Flow constant (SI)
d = Diameter (in.) IP	kW = Kilowatt = 1000 Watts
Δ = Difference or Change (Final - Initial)	LAT = Leaving Air Temperature
DB = Dry Bulb	lb = Pounds
EA = Exhaust Air	LWT = Leaving Water Temperature
EAT = Entering Air Temperature	ma = Mixed Air
EF = Exhaust Fan	MIN = Minimum
Eff = Efficiency	MAX = Maximum
EG = Exhaust Grille	N/A = Not Applicable
ESP = External Static Pressure	NA = No Access
EWT = Entering Water Temperature	NL = Not Listed
°F = Degrees Fahrenheit, °F	NPSHA = Net Positive Suction Head Available
FPB = Fan Powered Box	NS = Not Specified
FLA = Full Load Amps	OA = Outside Air
fpm = Feet per Minute (fpm)	OAT = Outside Air Temperature
ft = Foot	PD = Sheave Pitch Diameter
gal = Gallons	P.D. = Pressure Drop
GPM = Gallons Per Minute (GPM)	PF = Power Factor
h = Enthalpy (BTU/lb dry air)	SG = Supply Grille
P = Pressure	SR = Supply Register
ppm = parts per million	TP = Total Pressure
psi = Pounds Per Square Inch	T_{ra} = Return Air Temperature
psid = PSI Differential	TS = Tip Speed (fpm) IP, (m/s) SI
r = Radius (in)	TSP = Total Static Pressure
$\%_{ra}$ = % of Return Air	V = Velocity
RA = Return Air	VAV = Variable Air Volume
RAT = Return Air Temperature	VD = Volume Damper
RF = Return Fan	VFD = Variable Frequency Drive
RG = Return Grille	W = Watt
RH = Relative Humidity	WB = Wet Bulb
RPM = Revolutions Per Minute	wg = wc = water gauge = water column
RTU = Roof Top Unit	WHP = Water Horsepower (IP)
SA = Supply Air	ω = Humidity Ratio

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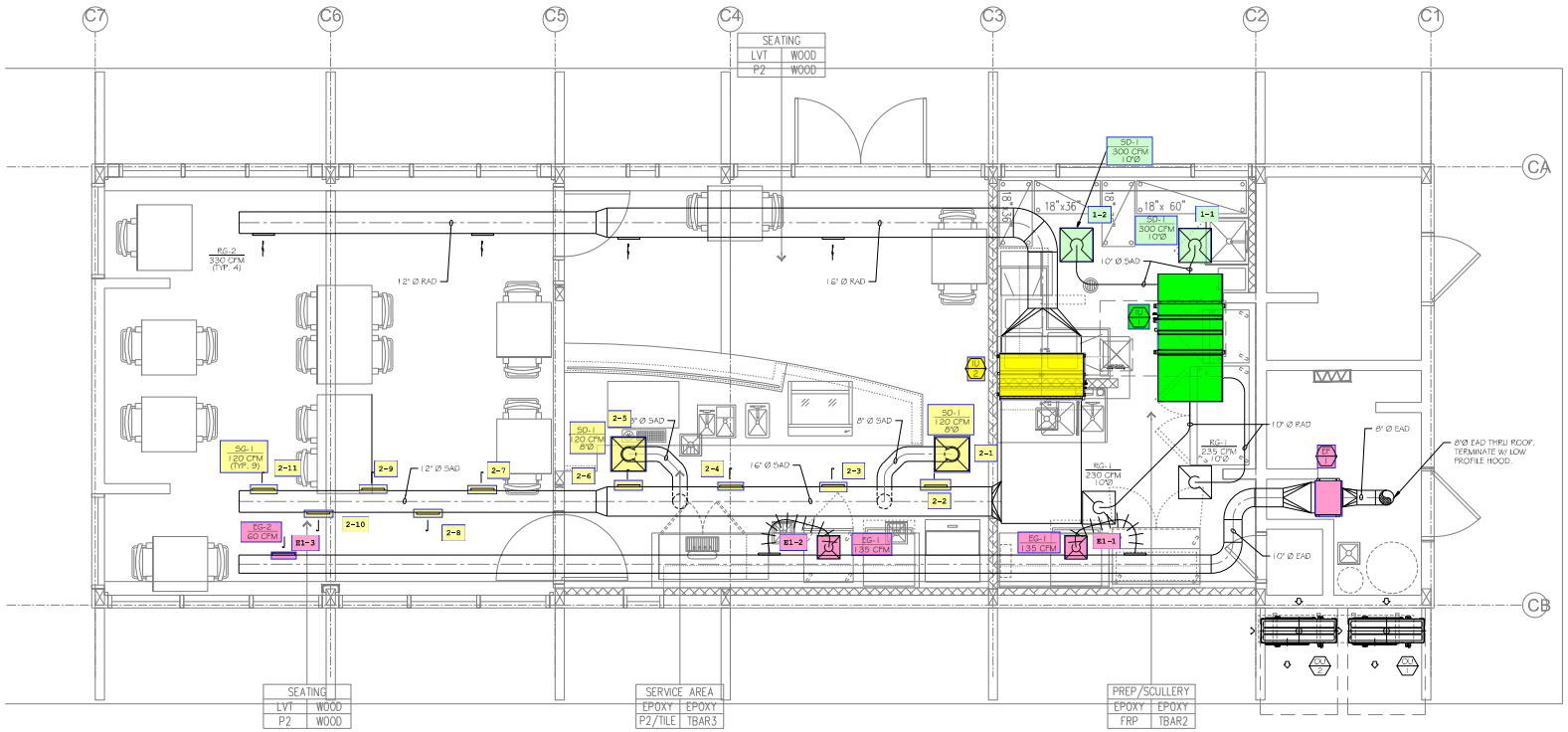
Testing, Adjusting, and Balancing Equipment

Function		Range	Minimum Accuracy	Instrument Information	Calibration Date	Date Due
AIR	AIR PRESSURE	0 in wg to 10 in wg	2% +/- 0.001 in wg	Evergreen S-PVF-1 24D-00509	6/17/2024	6/17/2025
	AIR VELOCITY INSTRUMENT	50 fpm to 3900 fpm	+/- 5 % +/- 7 fpm	Evergreen S-PVF-1 24D-00509	6/17/2024	6/17/2025
	DIRECT HOOD READING	100 cfm to 2000 cfm	+/- 5 % +/- 7 cfm	Evergreen S-PVF-1 24D-00509	6/17/2024	6/17/2025
TEMPERATURE	AIR METER	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	AIR PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	IMMERSION METER	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	IMMERSION PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	CONTACT METER	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	CONTACT PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
HUMIDITY	HUMIDITY PROBE	10 % RH to 90 % RH	3% of reading	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
ELECTRICAL	VOLTAGE MEASUREMENT	0 VAC to 600 VAC	2 % reading +/- 5 digits	Klein Tools CL800 S/N 1220C-C1	9/18/2024	9/18/2025
	AMPERAGE MEASUREMENT	0 Amperers to 100 Amperes	2 % reading +/- 5 digits	Klein Tools CL800 S/N 1220C-C1	9/18/2024	9/18/2025
ROTATION	ROTATION MEASUREMENT	60 rpm to 5000 rpm	2 % reading 2 rpm	Shimpo DT 207Lp S/N D1690029R	9/18/2024	9/18/2025



1 M2.1 FIRST FLOOR PLAN - NEW MECHANICAL
SCALE: 3/8" = 1'-0"

SCALE: 3/8" = 1'-0"

ZAL ENGINEERING

ZAL ENGINEERING
MECHANICAL CONSULTANTS
99 PACIFIC ST, STE 375G
MONTEREY, CA 93940
TELEPHONE (831) 641-7739
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REGISTERED PROFESSIONAL ENGINEER
JUSTIN ZUSTIAK VERTIS
MECHANICAL
STATE OF CALIFORNIA

NEW CAFE AT AGRIHOUSE

70 N WINCHESTER BLVD
SANTA CLARA, CA 95050

NO.	DESCRIPTION	DATE
1		
2		
3		
4		
5		

ENGINEER BY:

DRAWN BY:

CHECKED BY:

SHEET NUMBER
M2.1

SHEET OF

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