

Report By:

National TAB
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Report: TAB REPORT
Function: Test, Adjust, & Balance
Date: 05/01/2024

PROJECT
Tractor Supply (Oroville, CA)

Feather River Blvd

Oroville, CA

Client

B&M Builders, Inc.
11330 Sunrise Park Drive
Suite C
Rancho Cordova, CA 95742

National TAB

Project: Tractor Supply (Oroville, CA)

Table Of Contents

Section	Page #
Certification	3
Equipment Calibrations	4
Abbreviations	5
GRD Layout	6
AHU/RTU	7
FAN - Exhaust	13



CERTIFICATION

PROJECT: Tractor Supply (Oroville, 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 Standards for Testing, Adjusting, and Balancing of Environmental Systems*. Any variances from design quantities, which exceed NEBB tolerances, are noted in the Test-Adjust-Balance Report Project Summary.

The air distribution system has been tested and balanced and final adjustments have been made in accordance with NEBB standards and the project specifications.

NEBB TAB FIRM: National TAB-Southeast

REGISTRATION NO: 3755

CERTIFIED BY: J. Scott Springer 23312

DATE: 4/30/2024

The hydronic distribution system has been tested and balanced and final adjustments have been made in accordance with NEBB standards and the project specifications.

NEBB TAB FIRM: National TAB-Southeast

REGISTRATION NO: 3086

CERTIFIED BY: J. Scott Springer 23312

DATE:

Submitted and Certified by:

NEBB TAB FIRM: National TAB-Southeast

TAB PROFESSIONAL: J. Scott Springer

SIGNATURE:

REGISTRATION NO: 3755 (NTAB) / 23312

CERTIFICATION EXP: 12/31/2024





National TAB

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	Shortridge ADM-860C S/N M19547	10/17/2023	10/16/2024
	AIR VELOCITY INSTRUMENT	50 fpm to 3900 fpm	+/- 5 % +/- 7 fpm	Shortridge ADM-860C S/N M19548	10/17/2023	10/16/2024
	DIRECT HOOD READING	100 cfm to 2000 cfm	+/- 3 % +/- 7 cfm	Shortridge Flow Hood	10/17/2023	10/16/2024
TEMPERATURE	AIR METER	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - SRH77A S/N 081820093	10/20/2023	10/19/2024
	AIR PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - PD1388 7-6 S/N 5028	10/20/2023	10/19/2024
	IMMERSION METER	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - SRH77A S/N 081820093	10/20/2023	10/19/2024
	IMMERSION PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - PD1388 7-6 S/N 1075	10/20/2023	10/19/2024
	CONTACT METER	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - SRH77A S/N 081820093	10/20/2023	10/19/2024
	CONTACT PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - PD1388 7-6 S/N 4011	10/20/2023	10/19/2024
HUMIDITY	HUMIDITY PROBE	10 % RH to 90 % RH	3% of reading	Cooper ATKINS - SRH77A S/N 090315046	10/20/2023	10/19/2024
ELECTRICAL	VOLTAGE MEASUREMENT	0 VAC to 600 VAC	2 % reading +/- 5 digits	Dwyer CM-1 - S/N 190800099	10/16/2023	10/15/2024
	AMPERAGE MEASUREMENT	0 Amperers to 100 Amperes	2 % reading +/- 5 digits	Dwyer CM-1 - S/N 190800099	10/16/2023	10/15/2024
ROTATION	ROTATION MEASUREMENT	60 rpm to 5000 rpm	2 % reading 2 rpm	Dwyer TAC-L - S/N S1100123	10/16/2023	10/15/2024
HYDRONIC	PRESSURE MEASUREMENT	-30 in Hg to 200 psi	±2% of reading +/- 1 psi	Dwyer 490W-6 - S/N 01L6NK	6/21/2023	6/20/2024
	DIFFERENTIAL PRESSURE MEASUREMENT	0 psi - 80 psi	±2% of reading +/- 1 psi	Dwyer 490W-6 - S/N 01L6NK	6/21/2023	6/20/2024
DALT	DUCT LEAKAGE	-10"- +10" wc	±1% of reading +/- 0.004" wc	Kanomax DALT 6900 S/N: 080439	5/2023	5/2024

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
CO ₂ = 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

National TAB

Project: Tractor Supply (Oroville, CA)

System/Unit: AHU/RTU



Asset: RTU-1

AREA:102

Unit Data		
	Design	Actual
MFG	NA	TRANE
Serial Num	-	234512778D
Model Num	NA	YSJ180A4S0L02M0EA2A000A1
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	17X66
Num PreFilter 1	-	8
PreFilter Size 1	-	20X24X2

Motor Data		
	Design	Actual
Motor MFG	-	NL
Frame	-	NL
Horsepower	0.75	3.0
Motor Rpm	-	1850
Phase	3	3
Rated Voltage	460	460
Rated Amperage	-	4.6
Service Factor	-	NL

Test Data		
	Design	Actual
SF CFM	5000	5195
RA CFM	3475	3599
OA CFM	1525	1596
RL Voltage	460	495/496/495
RL Amperage	-	1.16/1.14/1.16
OA Damper Position	-	20%
Brake Horse Power	-	0.76

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.21"
Fan Suction SP	-	-0.49"
Fan Discharge SP	-	0.24"
Total ESP	0.7	0.45"
Fan Total SP	-	0.73"

Completed By: Zack Eismin on 04/15/2024

National TAB

Project: Tractor Supply (Oroville, CA)

System/Unit: AHU/RTU



Asset: RTU-2

AREA:102

Unit Data		
	Design	Actual
MFG	NA	TRANE
Serial Num	-	234512777D
Model Num	NA	YSJ180A4S0L02M0EA2A000A1
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	17X66
Num PreFilter 1	-	8
PreFilter Size 1	-	20X24X2

Motor Data		
	Design	Actual
Motor MFG	-	NL
Frame	-	NL
Horsepower	0.75	3.0
Motor Rpm	-	1850
Phase	3	3
Rated Voltage	460	460
Rated Amperage	-	4.6
Service Factor	-	NL

Test Data		
	Design	Actual
SF CFM	5000	5027
RA CFM	3495	3498
OA CFM	1505	1529
RL Voltage	460	494/494/495
RL Amperage	-	1.07/1.08/1.07
OA Damper Position	-	20%
Brake Horse Power	-	0.70

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.21"
Fan Suction SP	-	-0.51"
Fan Discharge SP	-	0.23"
Total ESP	0.7	0.44"
Fan Total SP	-	0.74"

Completed By: Zack Eismin on 04/15/2024

National TAB

Project: Tractor Supply (Oroville, CA)

System/Unit: AHU/RTU



Asset: RTU-3

AREA:102

Unit Data		
	Design	Actual
MFG	NA	TRANE
Serial Num	-	234512776D
Model Num	NA	YSJ180A4S0L02M0E0A2A000A1
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	17X66
Num PreFilter 1	-	8
PreFilter Size 1	-	20X24X2

Motor Data		
	Design	Actual
Motor MFG	-	NL
Frame	-	NL
Horsepower	0.75	3.0
Motor Rpm	-	1850
Phase	3	3
Rated Voltage	460	460
Rated Amperage	-	4.6
Service Factor	-	NL

Test Data		
	Design	Actual
SF CFM	5000	4958
RA CFM	3495	3430
OA CFM	1505	1528
RL Voltage	460	497/497/496
RL Amperage	-	1.05/1.04/0.99
OA Damper Position	-	20%
Brake Horse Power	-	0.68"

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.23"
Fan Suction SP	-	-0.46"
Fan Discharge SP	-	0.22"
Total ESP	0.7	0.45"
Fan Total SP	-	0.68"

Completed By: Zack Eismin on 04/15/2024

National TAB

Project: Tractor Supply (Oroville, CA)

System/Unit: AHU/RTU



Asset: RTU-4

AREA:102

Unit Data		
	Design	Actual
MFG	NA	TRANE
Serial Num	-	234512779D
Model Num	NA	YSJ180A4S0L02M0E0A2A000A1
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	17X66
Num PreFilter 1	-	8
PreFilter Size 1	-	20X24X2

Motor Data		
	Design	Actual
Motor MFG	-	NL
Frame	-	NL
Horsepower	0.75	3.0
Motor Rpm	-	1850
Phase	3	3
Rated Voltage	460	460
Rated Amperage	-	4.6
Service Factor	-	NL

Test Data		
	Design	Actual
SF CFM	5000	5077
RA CFM	3495	3578
OA CFM	1505	1499
RL Voltage	460	499/498/499
RL Amperage	-	0.95/0.97/0.97
OA Damper Position	-	20%
Brake Horse Power	-	0.62

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.25"
Fan Suction SP	-	-0.50"
Fan Discharge SP	-	0.19"
Total ESP	0.7	0.44"
Fan Total SP	-	0.69"

Completed By: Zack Eismin on 04/16/2024

National TAB

Project: Tractor Supply (Oroville, CA)

System/Unit: AHU/RTU



Asset: RTU-5

AREA:107

Unit Data		
	Design	Actual
MFG	NA	TRANE
Serial Num	-	234311472L
Model Num	NA	YHC037E4RXA2EM0E1A2A000A
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	15X27
Num PreFilter 1	-	2
PreFilter Size 1	-	20X30X2

Motor Data		
	Design	Actual
Motor MFG	-	GENTEQ
Frame	-	NL
Horsepower	-	0.75
Motor Rpm	-	NL
Phase	3	1
Rated Voltage	460	460
Rated Amperage	3.7	3.7
Service Factor	-	NL

Test Data		
	Design	Actual
SF CFM	1200	1095
RA CFM	1075	978
OA CFM	125	117
RL Voltage	460	495
RL Amperage	3.7	1.42
OA Damper Position	-	15%
Brake Horse Power	-	0.38

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.19"
Fan Suction SP	-	-0.28"
Fan Discharge SP	-	0.17"
Total ESP	0.7	0.36"
Fan Total SP	-	0.45"

Completed By: Zack Eismin on 04/16/2024

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Project: Tractor Supply (Oroville, CA)

AHU/RTU



Diffuser Supply (GRD)

RTU-5/107

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
5-1	106	CS-1	10	275	122	252	91.6
5-2	108	CS-1	12	450	338	409	90.9
5-3	110	CS-2	6	50	65	47	94.0
5-4	109	CS-2	6	50	40	48	96.0
5-5	111	CS-3	8	175	0	158	90.3
5-6	107	CS-1	8	200	180	181	90.5
Total				1200	745	1095	91.25%

Diffuser Ret/Exh (GRD)

RTU-5/107

Asset								
Asset Name	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
R5-1	CR-1	8	200	1	182	182	182	91.0
R5-2	CR-2	8	175	1	159	159	159	90.9
R5-3	CR-1	10	250	1	227	227	227	90.8
R5-4	CR-1	12	450	1	410	410	410	91.1
Total			1075		978	978	978	90.98%

National TAB

Project: Tractor Supply (Oroville, CA)

System/Unit: FAN - Exhaust



Asset: EF-1

AREA:110

Unit Data		
	Design	Actual
MFG	NA	GREENHECK
Model Num	NA	SP-A110
Serial Num	-	23245970
Type	CEILING	CEILING

Test Data		
	Design	Actual
CFM	100	92
RL Voltage	-	115
RL Amperage	-	NA
Total ESP	0.25	NA

Motor Data		
	Design	Actual
Motor MFG	-	NL
Frame	-	NL
Horsepower	-	NL
Motor Rpm	950	NL
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	0.19
Service Factor	-	NL

Completed By: Zack Eismin on 04/16/2024

National TAB

Project: Tractor Supply (Oroville, CA)

System/Unit: FAN - Exhaust



Asset: EF-2

AREA:109

Unit Data		
	Design	Actual
MFG	NA	GREENHECK
Model Num	NA	SP-A110
Serial Num	-	SPA110
Type	CEILING	CEILING

Test Data		
	Design	Actual
CFM	100	97
RL Voltage	-	115
RL Amperage	-	NA
Total ESP	0.25	NA

Motor Data		
	Design	Actual
Motor MFG	-	GREENHECK
Frame	-	NL
Horsepower	-	NL
Motor Rpm	950	NL
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	0.19
Service Factor	-	NL

Completed By: Zack Eismin on 04/16/2024

National TAB

Project: Tractor Supply (Oroville, CA)

System/Unit: FAN - Exhaust



Asset: EF-3

AREA:112

Unit Data		
	Design	Actual
MFG	NA	GREENHECK
Model Num	NA	CSP-A200
Serial Num	-	23245972
Type	INLINE CABINET	INLINE

Test Data		
	Design	Actual
CFM	170	177
RL Voltage	-	115
RL Amperage	-	NA
Total ESP	0.3	0.32"

Motor Data		
	Design	Actual
Motor MFG	-	NL
Frame	-	NL
Horsepower	-	NL
Motor Rpm	1400	NL
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	NL
Service Factor	-	NL

Completed By: Zack Eismin on 04/16/2024

National TAB

Project:Tractor Supply (Oroville, CA)

FAN - Exhaust



Diffuser Ret/Exh (GRD)

EF-3/112

Asset								
Asset Name	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
E3-11	WE-1	12X6	170	1	177	177	177	104.1
Total			170		177	177	177	104.12%