Report By:

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

Report: TAB REPORT

Function: Test, Adjust, & Balance

Date: 09/16/2024

Completed By:

PROJECT

CW 3300 Olympus - Gray Construction (Dallas, TX)

3300 Olympus Blvd

Dallas, TX 75019

Client

Billingsley

National TAB

Project: CW 3300 Olympus - Gray Construction (Dallas, TX)

Table Of Contents

CERTIFICATION

PROJECT: CW 3300 Olympus - Gray Construction (Dallas, TX)

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.

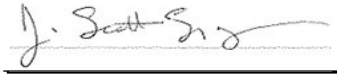
The air distribution system has been tested and balanced and final adjustments have been made in accordance with NEBB standards and the project specifications.

NEBB TAB FIRM:	National TAB-Southeast
REGISTRATION NO:	3755
CERTIFIED BY:	J. Scott Springer 23312
DATE:	9/16/2024

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

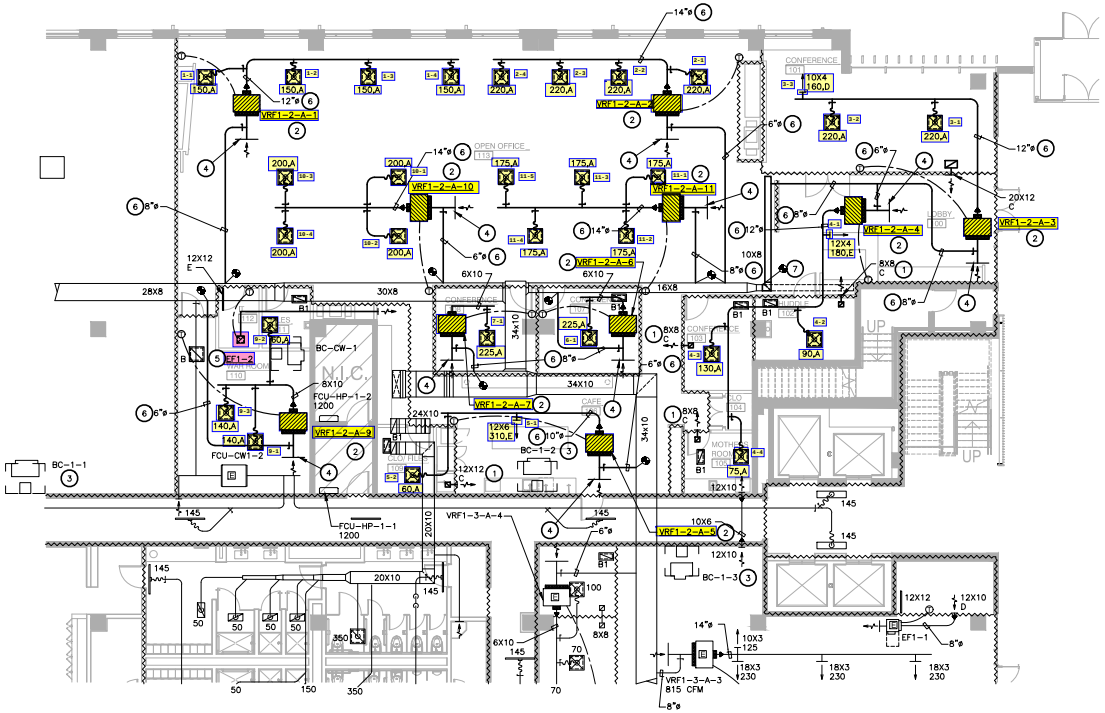
National TAB

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	6/3/2024	6/3/2025
	DIFFERENTIAL PRESSURE MEASUREMENT	0 psi - 80 psi	±2% of reading +/- 1 psi	Dwyer 490W-6 - S/N 01L6NK	6/3/2024	6/3/2025
DALT	DUCT LEAKAGE	-10"- +10" wc	±1% of reading +/- 0.004" wc	Kanomax DALT 6900 S/N: 080439	3/2024	3/1/2025

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



1 LEVEL 01 MECHANICAL PLAN
SCALE: 1/8"=1'-0"

NOTES BY SYMBOL ⓧ:

1. PROVIDE ACOUSTICALLY LINED RETURN AIR BOOT TRANSFER GRILLE IN WALL TO DECK AS HIGH AS POSSIBLE ABOVE CEILING WITH INTLET 90° ELBOW FACING UPWARD. SIZE PER PLANS. REFER TO DETAIL ON SHEET M3.01 FOR MORE INFORMATION.
2. FC UNIT TO BE SUSPENDED FROM STRUCTURE. EXTEND FULL SIZED RETURN AIR PLENUM AS INDICATED ON DRAWINGS. PROVIDE MANUAL DAMPER AT OUTSIDE AIR DUCT CONNECTION TO RETURN AIR PLENUM.
3. EXISTING BRANCH CONTROLLER SUSPENDED FROM STRUCTURE WITH ISOLATION SPRINGS.
4. EXTEND FULL SIZED RETURN PLENUM A MINIMUM OF 5'-0" OR AS FAR AS POSSIBLE FROM FAN COIL UNIT AS SHOWN. PROVIDE WIRE MESH WITH A MINIMUM OF 50% FREE AREA AT RETURN AIR OPENING. CONNECT OUTSIDE AIR DUCT WITH BALANCING DAMPER AS SHOWN ON DETAIL LOCATED ON SHEET M3.01.
5. INSTALL BOTTOM OF EXHAUST FAN AT CEILING AND SUSPEND FROM STRUCTURE USING ALTHREAD HANGER RODS WITH VIBRATION ISOLATOR PER EACH ROD. EXTEND EXHAUST DUCT A MINIMUM OF 5'-0" FROM FAN AND TERMINATE TRANSFER GRILLE MOUNTED AT END OF DUCT.
6. ALL EXPOSED ROUND DUCTWORK SHALL BE INTERNALLY LINED SPIRAL DUCT WITH MICROBIOLOGICAL TREATMENT AND MOUNTED AT HEIGHT REQUIRED TO MAINTAIN GRILLES AT SAME HEIGHT AS ADJACENT LIGHTING FIXTURES. COORDINATE FINAL HEIGHT WITH ARCHITECTURAL REPRESENTATIVE PRIOR TO ROUGH-IN.
7. EXTEND NEW FULL SIZE DUCT SAME SIZE AND MATERIALS TO MATCH EXISTING DUCT. VERIFY SIZE AT JOB SITE PRIOR TO BIDDING.

OUTSIDE AIR TAPS:

PROVIDE SQUARE TO ROUND TRANSITIONS AT EXISTING OUTSIDE AIR SUPPLY DUCT AS FOLLOWS:

6"X24" SQUARE TO 12"ø.
6"X16" SQUARE TO 10"ø.
6"X10" SQUARE TO 8"ø.

PROJECT COORDINATOR/ DESIGN CONSULTANT

idGROUP
2641 IRVING BLVD.
DALLAS, TEXAS 75207
TEL: 214-638-6800

ARCHITECT/ ENGINEER

Purdy - McGuire
Mechanical • Electrical Engineers
17300 North Dallas Parkway
Suite 3000
Dallas, Texas 75248-1147
Firm Registration # F-1511
Tel: 972/239-5337
Fax: 972/239-5201
www.purdymcguire.com

PMI JOB NO. 24007.001
PROJECT MGR. TODD JOHNSON

THIS DRAWING SHALL NOT BE REPRODUCED FOR USE ON ANY PROJECT OTHER THAN THAT SPECIFICALLY NOTED IN THE TITLE BLOCK WITHOUT THE WRITTEN CONSENT OF PURDY-MCGUIRE, INC. DALLAS, TX

SEAL

STATE OF TEXAS
TODD M. JOHNSON
86955
LICENSED
PROFESSIONAL ENGINEER
02-23-24

PROJECT NUMBER:	660-013
DRAWN BY:	RR
CHECKED BY:	MW
R.S.F.:	6,885

3300 OLYMPUS BLVD.
GRAY CONSTRUCTION

3300 OLYMPUS BLVD
SUITE #100
DALLAS, TX 75019

NO.	REVISIONS:	DATE:

CLIENT/LANDLORD ISSUE DATE:	02/23/2024
BID ISSUE DATE:	02/23/2024
PERMIT ISSUE DATE:	02/23/2024
CONSTRUCTION ISSUE DATE:	02/23/2024

DRAWING TITLE:

LEVEL 01 MECHANICAL PLAN

DRAWING NUMBER:

M2.01

National TAB

Project: CW 3300 - Gray Construction

Address: 3300 Olympus Blvd. Suite 100, Dallas, TX

Asset: VRF-1-2-A-1 **Area:**

Unit Data	
MFG	MITSUBISHI
Model Num	PEFY-P18NMAU-E5
Serial Num	46R00740

Motor Data	
Motor MFG	INTERTEK
Horsepower	0.162
Motor Rpm	ND
Phase	1
Voltage (rated)	208
Amperage (rated)	2.03

Test Data		
	Design	**Actual**
SA CFM	600	604
Fan RPM		DD
OA CFM	100	92
RA CFM	500	512
RL Voltage	208	212
RL Amperage	2.03	0.7
Suction ESP		-0.02
Discharge ESP		0.17
Total ESP	0.06	0.19
Brake HP		0.06

Asset	Area Served	Type	Size	DESIGN CFM	Prelim CFM	FINAL CFM	% to design
1-1	113	A	8	150	157	159	1.06
1-2	113	A	8	150	157	156	1.04
1-3	113	A	8	150	209	140	0.93
1-4	113	A	8	150	170	149	0.99
				600	**693**	**604**	**1.01**

NOTES:

[1] UNIT BALANCED AT LOW SPEED.

National TAB

Project: CW 3300 - Gray Construction

Address: 3300 Olympus Blvd. Suite 100, Dallas, TX

Asset: VRF-1-2-A-2 **Area:**

Unit Data	
MFG	MITSUBISHI
Model Num	TPEFYP024MA144A
Serial Num	34r0334830p90z

Motor Data	
Motor MFG	INTERTEK
Horsepower	0.162
Motor Rpm	ND
Phase	1
Voltage (rated)	208
Amperage (rated)	2.03

Test Data		
	Design	**Actual**
SA CFM	880	878
Fan RPM		DD
OA CFM	125	115
RA CFM	755	763
RL Voltage	208	211
RL Amperage	2.03	1.4
Suction ESP		-0.03
Discharge ESP		0.19
Total ESP	0.06	0.22
Brake HP		0.11

Asset	Area Served	Type	Size	DESIGN CFM	Prelim CFM	FINAL CFM	% to design
2-1	113	A	8	220	161	211	0.96
2-2	113	A	8	220	233	218	0.99
2-3	113	A	8	220	162	214	0.97
2-4	113	A	8	220	191	235	1.07
				880	**747**	**878**	**1.00**

NOTES:

[1] UNIT BALANCED AT MEDIUM-HIGH SPEED.

National TAB

Project: CW 3300 - Gray Construction

Address: 3300 Olympus Blvd. Suite 100, Dallas, TX

Asset: VRF-1-2-A-3 **Area:**

Unit Data	
MFG	MITSUBISHI
Model Num	PEFY-P18NMAU-E5
Serial Num	46R00738

Motor Data	
Motor MFG	INTERTEK
Horsepower	0.162
Motor Rpm	ND
Phase	1
Voltage (rated)	208
Amperage (rated)	2.03

Test Data		
	Design	**Actual**
SA CFM	600	620
Fan RPM		DD
OA CFM	115	123
RA CFM	485	497
RL Voltage	208	210
RL Amperage	2.03	0.7
Suction ESP		-0.02
Discharge ESP		0.22
Total ESP	0.06	0.24
Brake HP		0.06

Asset	Area Served	Type	Size	DESIGN CFM	Prelim CFM	FINAL CFM	% to design
3-1	101	A	8	220	153	201	0.91
3-2	101	A	8	220	182	243	1.10
3-3	101	D	10X4	160	397	176	1.10
				600	**732**	**620**	**1.03**

NOTES:

[1] UNIT BALANCED AT MEDIUM-LOW SPEED.

National TAB

Project: CW 3300 - Gray Construction

Address: 3300 Olympus Blvd. Suite 100, Dallas, TX

Asset: VRF-1-2-A-4 **Area:**

Unit Data	
MFG	MITSUBISHI
Model Num	TPEFYP015MA144A
Serial Num	31R0160030P90X

Motor Data	
Motor MFG	INTERTEK
Horsepower	0.162
Motor Rpm	ND
Phase	1
Voltage (rated)	208
Amperage (rated)	1.24

Test Data		
	Design	**Actual**
SA CFM	475	471
Fan RPM		DD
OA CFM	135	146
RA CFM	340	325
RL Voltage	208	211
RL Amperage	1.24	0.4
Suction ESP		-0.01
Discharge ESP		0.14
Total ESP	0.06	0.15
Brake HP		0.05

Asset	Area Served	Type	Size	DESIGN CFM	Prelim CFM	FINAL CFM	% to design
4-1	100	E	12X4	180	203	166	0.92
4-2	102	A	8	90	143	95	1.06
4-3	103	A	8	130	104	129	0.99
4-4	105	A	8	75	109	81	1.08
				475	**559**	**471**	**0.99**

NOTES:

[1] UNIT BALANCED AT LOW SPEED.

National TAB

Project: CW 3300 - Gray Construction

Address: 3300 Olympus Blvd. Suite 100, Dallas, TX

Asset: VRF-1-2-A-5 **Area:**

Unit Data	
MFG	MITSUBISHI
Model Num	TPEFYP012MA144A
Serial Num	44R0637130P90W

Motor Data	
Motor MFG	INTERTEK
Horsepower	0.114
Motor Rpm	ND
Phase	1
Voltage (rated)	208
Amperage (rated)	0.89

Test Data		
	Design	**Actual**
SA CFM	370	392
Fan RPM		DD
OA CFM	115	108
RA CFM	255	284
RL Voltage	208	212
RL Amperage	0.89	0.4
Suction ESP		-0.02
Discharge ESP		0.14
Total ESP	0.06	0.16
Brake HP		0.05

Asset	Area Served	Type	Size	DESIGN CFM	Prelim CFM	FINAL CFM	% to design
5-1	106	E	12X6	310	303	328	1.06
5-2	109	A	8	60	124	64	1.07
				370	**427**	**392**	**1.06**

NOTES:

[1] UNIT BALANCED AT MEDIUM-LOW SPEED.

National TAB

Project: CW 3300 - Gray Construction

Address: 3300 Olympus Blvd. Suite 100, Dallas, TX

Asset: VRF-1-2-A-6 **Area:**

Unit Data	
MFG	MITSUBISHI
Model Num	TPEFYP006MA144A
Serial Num	43R0284130P90U

Motor Data	
Motor MFG	INTERTEK
Horsepower	0.114
Motor Rpm	ND
Phase	1
Voltage (rated)	208
Amperage (rated)	0.7

Test Data		
	Design	**Actual**
SA CFM	225	219
Fan RPM		DD
OA CFM	50	46
RA CFM	175	173
RL Voltage	208	212
RL Amperage	0.7	0.2
Suction ESP		-0.01
Discharge ESP		0.14
Total ESP	0.06	0.15
Brake HP		0.03

Asset	Area Served	Type	Size	DESIGN CFM	Prelim CFM	FINAL CFM	% to design
6-1	107	A	8	225	219	219	0.97
				225	**219**	**219**	**0.97**

NOTES:

[1] UNIT BALANCED AT LOW SPEED.

National TAB

Project: CW 3300 - Gray Construction

Address: 3300 Olympus Blvd. Suite 100, Dallas, TX

Asset: VRF-1-2-A-7 **Area:**

Unit Data	
MFG	MITSUBISHI
Model Num	TPEFYP006MA144A
Serial Num	41R0253430P90U

Motor Data	
Motor MFG	INTERTEK
Horsepower	0.114
Motor Rpm	ND
Phase	1
Voltage (rated)	208
Amperage (rated)	0.7

Test Data		
	Design	**Actual**
SA CFM	225	238
Fan RPM		DD
OA CFM	50	53
RA CFM	175	185
RL Voltage	208	211
RL Amperage	0.7	0.3
Suction ESP		-0.03
Discharge ESP		0.12
Total ESP	0.06	0.15
Brake HP		0.05

Asset	Area Served	Type	Size	DESIGN CFM	Prelim CFM	FINAL CFM	% to design
7-1	108	A	8	225	238	238	1.06
				225	**238**	**238**	**1.06**

NOTES:

[1] UNIT BALANCED AT MEDIUM-LOW SPEED.

National TAB

Project: CW 3300 - Gray Construction

Address: 3300 Olympus Blvd. Suite 100, Dallas, TX

Asset: VRF-1-2-A-9 **Area:**

Unit Data	
MFG	MITSUBISHI
Model Num	TPEFYP012MA144A
Serial Num	44R0637030P90W

Test Data		
	Design	**Actual**
SA CFM	340	354
Fan RPM		DD
OA CFM	105	98
RA CFM	235	256
RL Voltage	208	211
RL Amperage	0.89	0.4
Suction ESP		-0.02
Discharge ESP		0.13
Total ESP	0.06	0.15
Brake HP		0.05

Motor Data	
Motor MFG	INTERTEK
Horsepower	0.114
Motor Rpm	ND
Phase	1
Voltage (rated)	208
Amperage (rated)	0.89

Asset	Area Served	Type	Size	DESIGN CFM	Prelim CFM	FINAL CFM	% to design
9-1	110	A	8	140	135	149	1.06
9-2	111	A	8	60	120	64	1.07
9-3	110	A	8	140	128	141	1.01
				340	**383**	**354**	**1.04**

NOTES:
[1] UNIT BALANCED AT MEDIUM-LOW SPEED.

National TAB

Project: CW 3300 - Gray Construction

Address: 3300 Olympus Blvd. Suite 100, Dallas, TX

Asset: VRF-1-2-A-10 **Area:**

Unit Data	
MFG	MITSUBISHI
Model Num	TPEFYP024MA144A
Serial Num	34R0335930P90Z

Motor Data	
Motor MFG	INTERTEK
Horsepower	0.162
Motor Rpm	ND
Phase	1
Voltage (rated)	208
Amperage (rated)	2.03

Test Data		
	Design	**Actual**
SA CFM	800	777
Fan RPM		DD
OA CFM	115	105
RA CFM	685	672
RL Voltage	208	211
RL Amperage	2.03	0.9
Suction ESP		-0.07
Discharge ESP		0.13
Total ESP	0.06	0.20
Brake HP		0.07

Asset	Area Served	Type	Size	DESIGN CFM	Prelim CFM	FINAL CFM	% to design
10-1	113	A	8	200	188	188	0.94
10-2	113	A	8	200	200	200	1.00
10-3	113	A	8	200	199	199	1.00
10-4	113	A	8	200	190	190	0.95
				800	**777**	**777**	**0.97**

NOTES:

[1] UNIT BALANCED AT MEDIUM-LOW SPEED.

National TAB

Project: CW 3300 - Gray Construction

Address: 3300 Olympus Blvd. Suite 100, Dallas, TX

Asset: VRF-1-2-A-11 **Area:**

Unit Data	
MFG	MITSUBISHI
Model Num	TPEFYP024MA144A
Serial Num	34R0336030P90Z

Motor Data	
Motor MFG	INTERTEK
Horsepower	0.162
Motor Rpm	ND
Phase	1
Voltage (rated)	208
Amperage (rated)	2.03

Test Data		
	Design	**Actual**
SA CFM	880	844
Fan RPM		DD
OA CFM	135	126
RA CFM	745	718
RL Voltage	208	210
RL Amperage	2.03	1.00
Suction ESP		-0.03
Discharge ESP		0.14
Total ESP	0.06	0.17
Brake HP		0.08

Asset	Area Served	Type	Size	DESIGN CFM	Prelim CFM	FINAL CFM	% to design
11-1	113	A	8	175	201	175	1.00
11-2	113	A	8	175	74	170	0.97
11-3	113	A	8	175	272	168	0.96
11-4	113	A	8	175	126	173	0.99
11-5	113	A	8	175	124	158	0.90
				875	**797**	**844**	**0.96**

NOTES:

[1] UNIT BALANCED AT MEDIUM SPEED.

National TAB

Project: CW 3300 - Gray Construction

Address: 3300 Olympus Blvd. Suite 100, Dallas, TX

Asset: EF1-2 **Area:**

Unit Data	
MFG	LOREN COOK
Model Num	GEMINI 180
Serial Num	615740
Type	IN-LINE

Motor Data	
Horsepower	ND
Motor Rpm	ND
Phase	1
Voltage (rated)	115
Amperage (rated)	1

Test Data		
	Design	**Actual**
CFM	200	52[1]
Fan RPM		DD
RL Voltage	115	122
RL Amperage	1.00	0.7
Suction ESP		-0.01
Total ESP	0.5	0.01

NOTES:

[1] FAN IS OERATING WITH FAN SPEED CONTROLLER AT HIGHEST POSSBIEL SPEED.
BACKDRAFT DAMPER WAS VERIFIED TO BE OPEN.