

Report By:



National TAB
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Cincinnati, OH 45246

Report: Test and Balance
Date: 10/7/2020

PROJECT
CW - 3401 NORTHSTAR (DALLAS, TX)

3401 OLYMPUS BLVD SUITE 510
DALLAS, TX 75019

Client

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1722 Routh St.
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Dallas, TX 75201

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Project: CW - 3401 NORTHSTAR (DALLAS, TX)

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CERTIFICATION

PROJECT: CW - 3401 NORTHSTAR (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.

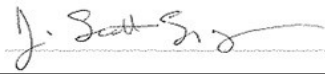
The air distribution system has been tested and balanced and final adjustments have been made in accordance with NEBB standards and the project specifications.

NEBB TAB FIRM: National TAB-Southeast
REGISTRATION NO: 3755
CERTIFIED BY: J. Scott Springer 23312
DATE: 10/2/2020

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: 3/31/2021





National TAB

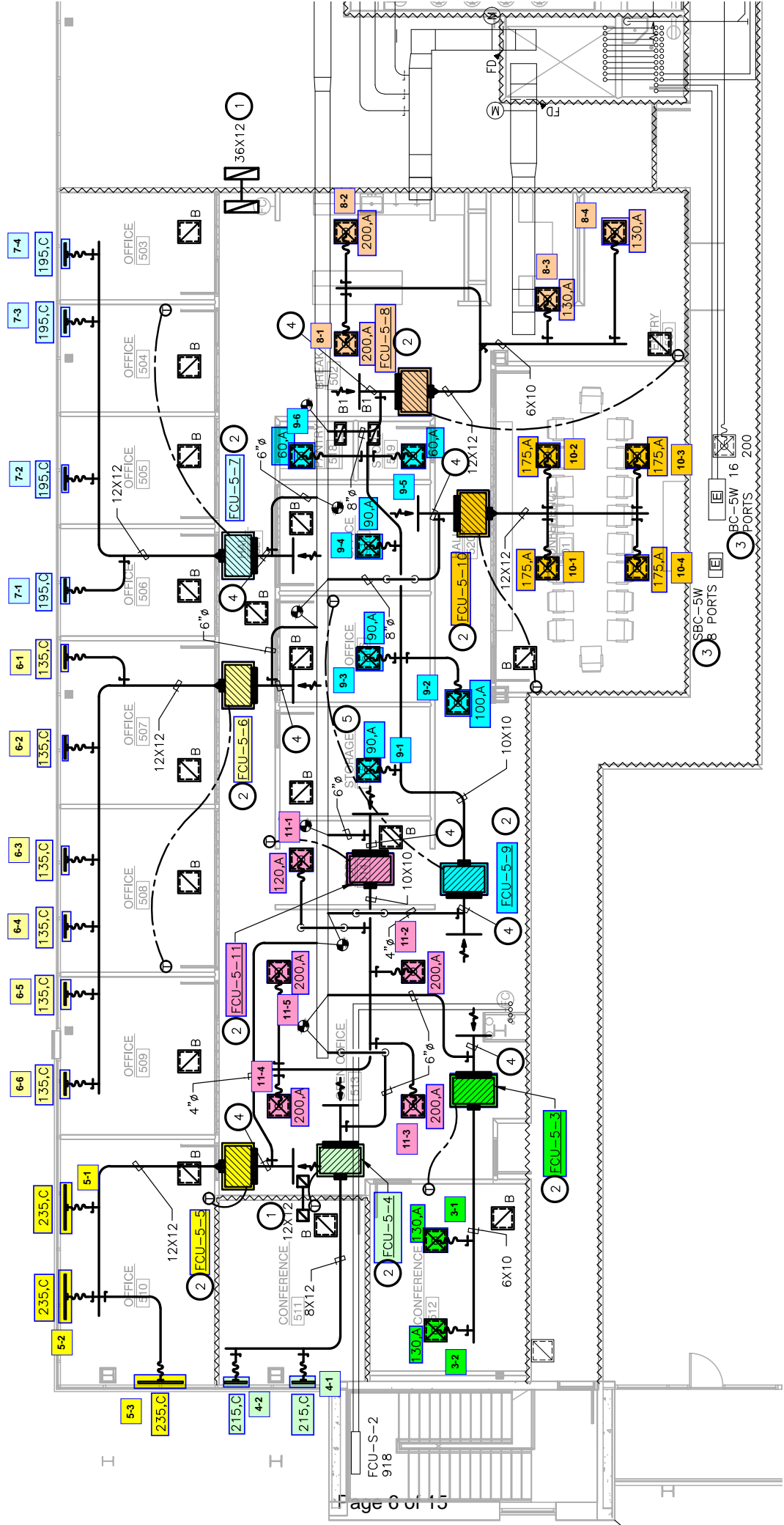
Testing, Adjusting, and Balancing Equipment



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	EVERGREEN-PVT -SN-1900255	11/6/2019	11/6/2020
	AIR VELOCITY INSTRUMENT	50 fpm to 3900 fpm	+/- 5 % +/- 7 fpm	EVERGREEN-PVT -SN-1900255	11/6/2019	11/6/2020
	DIRECT HOOD READING	100 cfm to 2000 cfm	+/- 5 % +/- 7 cfm	EVERGREEN15 -SN-1900255	10/25/2019	10/25/2020
TEMPERATURE	AIR METER	-20 F to 240 F	+/- .5% 2 F	Cooper ATKINS - SRH77A S/N 071118034	3/19/2020	3/19/2021
	AIR PROBE	-20 F to 240 F	+/- .5% 2 F	Cooper ATKINS - PD1388 7-6 S/N 5028	3/19/2020	3/19/2021
	IMMERSION METER	-20 F to 240 F	+/- .5% 2 F	Cooper ATKINS - SRH77A S/N 071118034	3/19/2020	3/19/2021
	IMMERSION PROBE	-20 F to 240 F	+/- .5% 2 F	Cooper ATKINS - PD1388 7-6 S/N 1075	3/19/2020	3/19/2021
	CONTACT METER	-20 F to 240 F	+/- .5% 2 F	Cooper ATKINS - SRH77A S/N 071118034	3/19/2020	3/19/2021
	CONTACT PROBE	-20 F to 240 F	+/- .5% 2 F	Cooper ATKINS - PD1388 7-6 S/N 4011	3/19/2020	3/19/2021
HUMIDITY	HUMIDITY PROBE	10 % RH to 90 % RH	3% of reading	Cooper ATKINS - SRH77A S/N 071118034	3/19/2020	3/19/2021
ELECTRICAL	VOLTAGE MEASUREMENT	0 VAC to 600 VAC	2 % reading +/- 5 digits	Fluke 373 True RMS, S/N: 33290686	3/19/2020	3/19/2021
	AMPERAGE MEASUREMENT	0 Amperers to 100 Amperes	2 % reading +/- 5 digits	Fluke 373 True RMS, S/N: 33290686	3/19/2020	3/19/2021
ROTATION	ROTATION MEASUREMENT	60 rpm to 5000 rpm	2 % reading 2 rpm	SHIMPO DT-207LR S/N: D1530081R	3/18/2020	3/18/2021
HYDRONIC	PRESSURE MEASUREMENT	-30 in Hg to 200 psi	±2% of reading +/- 1 psi	Alnor HM680 S/N: 70807241	1/5/2020	1/5/2021
	DIFFERENTIAL PRESSURE MEASUREMENT	0 psi - 80 psi	±2% of reading +/- 1 psi	Alnor HM680 S/N: 70807241	1/5/2020	1/5/2021

ABBREVIATIONS

AK	Area Factor	NL	Not Listed
B.H.P.	Brake Horse Power	NO.	Number
CFM	Cubic Feet Per Minute	NPSH	Net Positive Suction Head
CO ₂	Carbon Dioxide	NOX	Mono – Nitrogen Oxides
CO	Carbon Monoxide	NS	Not Specified
CH ₂ O	Formaldehyde	OA	Outside Air
CD	Ceiling Diffuser	OAT	Outdoor Air Temperature
CLG	Cooling	P.F.	Power Factor
CF	Correction Factor	P.D.	Pressure Drop
DB	Dry Bulb	PPM	Parts Per Million
Dir	Direction	PSI	Pounds Per Square Inch
EA	Exhaust Air	PSID	PSI Differential
Eff.	Efficiency	RA	Return Air
EF	Exhaust Fan	RH	Relative Humidity
EAT	Entering Air Temperature	RF	Return Fan
EG	Exhaust Grille	RPM	Rotations Per Minute
E.S.P.	External Static Pressure	RAT	Return Air Temperature
EWT	Entering Water Temperature	RG	Return Grille
FPM	Feet Per Minute	SA	Supply Air
F.L.	Full Load	S.F.	Service Factor
FPVAV	Fan Powered Variable Air Volume	SF	Supply Fan
FT	Feet	S.P.	Static Pressure
F	Fahrenheit	SR	Supply Register
GPM	Gallons Per Minute	SQ.	Square
H.P.	Horse Power	TEMP	Temperature
HTG	Heating	T.S.P.	Total Static Pressure
IN	Inches	VEL	Velocity
LAT	Leaving Air Temperature	VFD	Variable Frequency Drive
LWT	Leaving Water Temperature	VAV	Variable Air Volume
MIN	Minimum	VVR	Variable Volume Reheat
MAX	Maximum	WB	Wet Bulb
NEBB	National Environmental Balancing Bureau	WC	Water Column
N/A	Not Applicable	%	Percentage
NA	No Access	#	Number



FCU-S-2
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National TAB

Project: CW - 3401 NORTHSTAR (DALLAS, TX)

System/Unit: Fan Coil

Asset: FCU-5-3

AREA: 512

Unit Data		
	Design	Actual
MFG	NA	MITSUBISHI
Model Num	NA	TPEFYP008
Serial Num	-	05R0110330P80 D
Configuration	HORIZONTAL	HORIZONTAL

Motor Data		
	Design	Actual
Horsepower	-	NL
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	1.05

Test Data		
	Design	Actual
SFAN CFM	260	257
Motor Speed SetPt	-	MEDIUM LOW
RL Voltage	-	207
RL Amperage	-	0.22
RA CFM	140	142
OA CFM	120	115

Performance Data		
	Design	Actual
Suction ESP	-	0.07
Discharge ESP	-	0.13
Total ESP		0.20

Completed By: Brian Irvin on 10/05/2020

Notes:

Diffuser Supply (GRD)

FCU-5-3 / 512

Asset	Area Served	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	512	A	8	130		136	156	129	99.2
SGRD2	512	A	8	130		175	156	128	98.5

Completed By: Brian Irvin on 08/31/2020

Asset	Area Served	Notes

National TAB

Project: CW - 3401 NORTHSTAR (DALLAS, TX)

System/Unit: Fan Coil

Asset: FCU-5-4

AREA: 511

Unit Data		
	Design	Actual
MFG	NA	MITSUBISHI
Model Num	NA	TPEFYP012
Serial Num	-	9YR0078830P80 E
Configuration	HORIZONTAL	HORIZONTAL

Motor Data		
	Design	Actual
Horsepower	-	NL
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	1.20

Test Data		
	Design	Actual
SFAN CFM	430	433
Motor Speed SetPt	-	MED HIGH
RL Voltage	-	211
RL Amperage	-	0.60
RA CFM	310	300
OA CFM	120	133

Performance Data		
	Design	Actual
Suction ESP	-	0.06
Discharge ESP	-	0.11
Total ESP		0.17

Completed By: Brian Irvin on 10/05/2020

Notes:

Diffuser Supply (GRD)

FCU-5-4 / 511

Asset	Area Served	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	511	C	8	215		178	223	223	103.7
SGRD2	511	C	8	215		183	210	210	97.7

Completed By: Brian Irvin on 10/05/2020

Asset	Area Served	Notes

National TAB

Project: CW - 3401 NORTHSTAR (DALLAS, TX)

System/Unit: Fan Coil

Asset: FCU-5-5

AREA: 510

Unit Data		
	Design	Actual
MFG	NA	MITSUBISHI
Model Num	NA	TPEFYP018
Serial Num	-	06R0172230P80 G
Configuration	HORIZONTAL	HORIZONTAL

Test Data		
	Design	Actual
SFAN CFM	705	692
Motor Speed SetPt	-	MED HIGH
RL Voltage	-	208
RL Amperage	-	1.00
RA CFM	685	680
OA CFM	20	20

Motor Data		
	Design	Actual
Horsepower	-	NL
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	1.56

Performance Data		
	Design	Actual
Suction ESP	-	0.02
Discharge ESP	-	0.14
Total ESP		0.16

Completed By: Brian Irvin on 10/05/2020

Notes:

Diffuser Supply (GRD)

FCU-5-5 / 510

Asset	Area Served	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	510	C	8	235		177		226	96.2
SGRD2	510	C	8	235		184		228	97.0
SGRD3	510	C	8	235		195		238	101.3

Completed By: Brian Irvin on 10/05/2020

Asset	Area Served	Notes

National TAB

Project: CW - 3401 NORTHSTAR (DALLAS, TX)

System/Unit: Fan Coil

Asset: FCU-5-6

AREA: 508

Unit Data		
	Design	Actual
MFG	NA	MITSUBISHI
Model Num	NA	TPEFYP018
Serial Num	-	06R0172130P80 G
Configuration	HORIZONTAL	HORIZONTAL

Motor Data		
	Design	Actual
Horsepower	-	NL
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	1.56

Test Data		
	Design	Actual
SFAN CFM	810	780
Motor Speed SetPt	-	HIGH
RL Voltage	-	201
RL Amperage	-	1.31
RA CFM	750	717
OA CFM	60	63

Performance Data		
	Design	Actual
Suction ESP	-	0.07
Discharge ESP	-	0.14
Total ESP		0.21

Completed By: Brian Irvin on 10/05/2020

Notes:

Diffuser Supply (GRD)

FCU-5-6 / 508

Asset	Area Served	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	507	C	8	135		82	88	123	91.1
SGRD2	507	C	8	135		82	90	126	93.3
SGRD3	508	C	8	135		85	88	133	98.5
SGRD4	508	C	8	135		102	92	134	99.3
SGRD5	509	C	8	135		119	93	131	97.0
SGRD6	509	C	8	135		80	91	133	98.5

Completed By: Brian Irvin on 10/05/2020

Asset	Area Served	Notes

National TAB

Project: CW - 3401 NORTHSTAR (DALLAS, TX)

System/Unit: Fan Coil

Asset: FCU-5-7

AREA: 504

Unit Data		
	Design	Actual
MFG	NA	MITSUBISHI
Model Num	NA	TPEFYP018
Serial Num	-	06R0172630P80 G
Configuration	HORIZONTAL	HORIZONTAL

Motor Data		
	Design	Actual
Horsepower	-	NL
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	1.56

Test Data		
	Design	Actual
SFAN CFM	780	769
Motor Speed SetPt	-	HIGH
RL Voltage	-	208
RL Amperage	-	1.06
RA CFM	700	695
OA CFM	80	74

Performance Data		
	Design	Actual
Suction ESP	-	0.06
Discharge ESP	-	0.12
Total ESP		0.18

Completed By: Brian Irvin on 10/05/2020

Notes:

Diffuser Supply (GRD)

FCU-5-7 / 504

Asset	Area Served	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	506	C	8	195		134	159	188	96.4
SGRD2	505	C	8	195		138	140	210	107.7
SGRD3	504	C	8	195		93	124	179	91.8
SGRD4	503	C	8	195		190	135	192	98.5

Completed By: Brian Irvin on 10/05/2020

Asset	Area Served	Notes

National TAB

Project: CW - 3401 NORTHSTAR (DALLAS, TX)

System/Unit: Fan Coil

Asset: FCU-5-8

AREA: 500

Unit Data		
	Design	Actual
MFG	NA	MITSUBISHI
Model Num	NA	TPEFYP018
Serial Num	-	06R0172530P80 G
Configuration	HORIZONTAL	HORIZONTAL

Motor Data		
	Design	Actual
Horsepower	-	NL
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	1.56

Test Data		
	Design	Actual
SFAN CFM	680	698
Motor Speed SetPt	-	MED HIGH
RL Voltage	-	206
RL Amperage	-	0.96
RA CFM	500	503
OA CFM	180	195

Performance Data		
	Design	Actual
Suction ESP	-	0.02
Discharge ESP	-	0.13
Total ESP		0.15

Completed By: Brian Irvin on 10/05/2020

Notes:

Diffuser Supply (GRD)

FCU-5-8 / 500

Asset	Area Served	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	502	A	8	200		173	132	209	104.5
SGRD2	502	A	8	200		240	205	218	109.0
SGRD3	500	A	8	130		49	120	132	101.5
SGRD4	500	A	8	130		60	115	139	106.9

Completed By: Brian Irvin on 08/31/2020

Asset	Area Served	Notes

National TAB

Project: CW - 3401 NORTHSTAR (DALLAS, TX)

System/Unit: Fan Coil

Asset: FCU-5-9

AREA: 506

Unit Data		
	Design	Actual
MFG	NA	MITSUBISHI
Model Num	NA	TPEFYP018
Serial Num	-	06R0171530P80 G
Configuration	HORIZONTAL	HORIZONTAL

Motor Data		
	Design	Actual
Horsepower	-	NL
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	1.56

Test Data		
	Design	Actual
SFAN CFM	490	515
Motor Speed SetPt	-	LOW
RL Voltage	-	208
RL Amperage	-	0.85
RA CFM	450	477
OA CFM	40	38

Performance Data		
	Design	Actual
Suction ESP	-	0.06
Discharge ESP	-	0.18
Total ESP	-	0.24

Completed By: Brian Irvin on 10/05/2020

Notes:

Diffuser Supply (GRD)

FCU-5-9 / 506

Asset	Area Served	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	515	A	8	90		83	93	91	101.1
SGRD2	520	A	8	100		105	120	107	107.0
SGRD3	516	A	8	90		87	109	96	106.7
SGRD4	517	A	8	90		97	113	95	105.6
SGRD5	519	A	8	60		93	72	65	108.3
SGRD6	518	A	8	60		93	66	61	101.7

Completed By: Brian Irvin on 08/31/2020

Asset	Area Served	Notes

National TAB

Project: CW - 3401 NORTHSTAR (DALLAS, TX)

System/Unit: Fan Coil

Asset: FCU-5-10

AREA: 501

Unit Data		
	Design	Actual
MFG	NA	MITSUBISHI
Model Num	NA	TPEFYP024
Serial Num	-	06R0187730P80 H
Configuration	HORIZONTAL	HORIZONTAL

Motor Data		
	Design	Actual
Horsepower	-	NL
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	2.73

Test Data		
	Design	Actual
SFAN CFM	700	716
Motor Speed SetPt	-	LOW
RL Voltage	-	207
RL Amperage	-	1.29
RA CFM	460	481
OA CFM	240	235

Performance Data		
	Design	Actual
Suction ESP	-	0.02
Discharge ESP	-	0.24
Total ESP	-	0.26

Completed By: Brian Irvin on 10/05/2020

Notes:

Diffuser Supply (GRD)

FCU-5-10 / 501

Asset	Area Served	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	501	A	8	175		259	205	184	105.1
SGRD2	501	A	8	175		246	206	166	94.9
SGRD3	501	A	8	175		204	209	177	101.1
SGRD4	501	A	8	175		198	210	189	108.0

Completed By: Brian Irvin on 08/31/2020

Asset	Area Served	Notes

National TAB

Project: CW - 3401 NORTHSTAR (DALLAS, TX)

System/Unit: Fan Coil

Asset: FCU-5-11

AREA: 521

Unit Data		
	Design	Actual
MFG	NA	MITSUBISHI
Model Num	NA	TPEFYP024
Serial Num	-	06R0187630P80 H
Configuration	HORIZONTAL	HORIZONTAL

Motor Data		
	Design	Actual
Horsepower	-	NL
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	2.73

Test Data		
	Design	Actual
SFAN CFM	920	964
Motor Speed SetPt	-	HIGH
RL Voltage	-	210
RL Amperage	-	1.50
RA CFM	840	878
OA CFM	80	86

Performance Data		
	Design	Actual
Suction ESP	-	0.03
Discharge ESP	-	0.28
Total ESP	-	0.28

Completed By: Brian Irvin on 10/05/2020

Notes:

Diffuser Supply (GRD)

FCU-5-11 / 521

Asset	Area Served	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	514	A	8	120		124	106	120	100.0
SGRD2	513	A	8	200		178	176	201	100.5
SGRD3	513	A	8	200		182	176	210	105.0
SGRD4	513	A	8	200		138	176	215	107.5
SGRD5	513	A	8	200		190	176	218	109.0

Completed By: Brian Irvin on 10/05/2020

Asset	Area Served	Notes