Report By:

National TAB
105 Stone Village Drive
Fort Mill, SC 29708

Report: TAB REPORT

Function: Test, Adjust, & Balance

Date: 11/13/2025

Completed By: National TAB

PROJECT

Chase Bank (Ft. Worth, TX)

229 East Bonds Ranch Road

Ft. Worth, TX 76179

Client

MAD Company Mechanical, LLC

2028 Wayward Sun Dr

Austin, TX 78754

National TAB

Project: Chase Bank (Ft. Worth, TX)

Table Of Contents

CERTIFICATION

PROJECT: Chase Bank (Ft. Worth, 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.

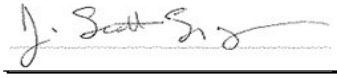
The air distribution system has been tested and balanced and final adjustments have been made in accordance with NEBB standards and the project specifications.

NEBB TAB FIRM:	National TAB-Southeast
REGISTRATION NO:	3755
CERTIFIED BY:	J. Scott Springer 23312
DATE:	11/14/2025

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:	3755
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:	12/31/2025

National TAB

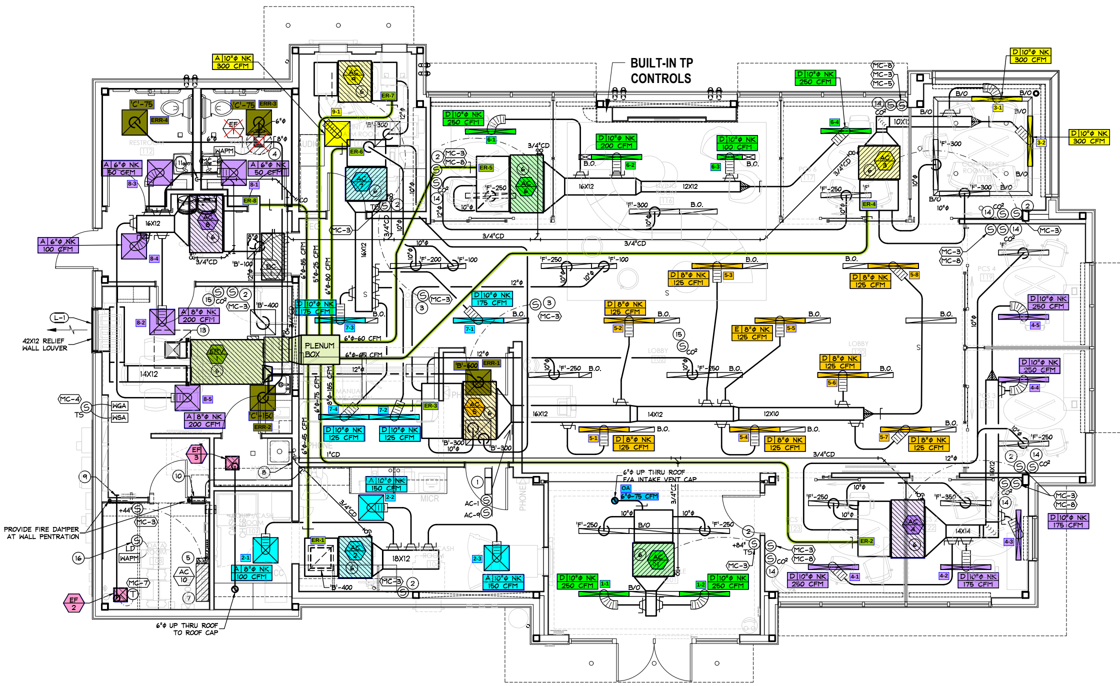
Testing, Adjusting, and Balancing Equipment

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	9/30/2025	9/30/2026
	AIR VELOCITY INSTRUMENT	50 fpm to 3900 fpm	+/- 5 % +/- 7 fpm	Shortridge ADM-860C S/N M19547	9/30/2025	9/30/2026
	DIRECT HOOD READING	100 cfm to 2000 cfm	+/- 3 % +/- 7 cfm	Evergreen Telemetry Capture Hood	8/12/2025	8/12/2026
TEMPERATURE	AIR METER	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - SRH77A S/N 041018026	9/30/2025	9/30/2026
	AIR PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - 4011 S/N 33-20	9/30/2025	9/30/2026
	IMMERSION METER	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - SRH77A S/N 041018026	9/30/2025	9/30/2026
	IMMERSION PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - 4011 S/N 33-20	9/30/2025	9/30/2026
	CONTACT METER	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - SRH77A S/N 041018026	9/30/2025	9/30/2026
	CONTACT PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - 4011 S/N 33-20	9/30/2025	9/30/2026
HUMIDITY	HUMIDITY PROBE	10 % RH to 90 % RH	3% of reading	Cooper ATKINS - SRH77A S/N 041018026	9/30/2025	9/30/2026
ELECTRICAL	VOLTAGE MEASUREMENT	0 VAC to 600 VAC	2 % reading +/- 5 digits	Dwyer CM-1 - S/N 190800099	9/30/2025	9/30/2026
	AMPERAGE MEASUREMENT	0 Amperers to 100 Amperes	2 % reading +/- 5 digits	Dwyer CM-1 - S/N 190800099	9/30/2025	9/30/2026
ROTATION	ROTATION MEASUREMENT	60 rpm to 5000 rpm	2 % reading 2 rpm	Dwyer TAC-L - S/N S1100123	9/30/2025	9/30/2026
HYDRONIC	PRESSURE MEASUREMENT	-30 in Hg to 200 psi	±2% of reading +/- 1 psi	Shortridge HDM 250 - S/N W25059	6/18/2025	6/18/2026
	DIFFERENTIAL PRESSURE MEASUREMENT	0 psi - 80 psi	±2% of reading +/- 1 psi	Shortridge HDM 250 - S/N W25059	6/18/2025	6/18/2026
DALT	DUCT LEAKAGE	-10"- +10" wc	±1% of reading +/- 0.004" wc	Kanomax DALT 6900 S/N: 080439	3/7/2025	3/7/2026

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

MECHANICAL GENERAL NOTES:	
1.	HVAC WORK CONSISTS OF PROVIDING AIR CONDITIONING SYSTEMS FOR A COMPLETE OPERATING SYSTEM AS INDICATED ON THE DRAWINGS. ALL WORK SHALL COMPLY WITH APPLICABLE CODES IN SPECIFICATIONS. IT IS THE INTENTION OF THE CONTRACT DRAWINGS AND SPECIFICATION TO CALL FOR COMPLETE, FINISHED WORK, TESTED, AND READY FOR OPERATION.
2.	AN AIR BALANCE SHALL BE PERFORMED BY AN APPROVED INDEPENDENT THIRD PARTY AIR BALANCE CONTRACTOR IN ACCORDANCE WITH THE LATEST EDITION OF STANDARDS PUBLISHED BY THE ASSOCIATED AIR BALANCE COUNCIL (AABC), THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB), OR THE TESTING, ADJUSTING, AND BALANCING BUREAU (TABB). BALANCE EACH SUPPLY, RETURN, EXHAUST AND OUTSIDE AIR DEVICE WITHIN 5% OF REQUIREMENTS AND FURNISH A REPORT TO THE CONSTRUCTION MANAGER. THE ENTIRE HVAC SYSTEM MUST BE FULLY OPERABLE, BALANCED, AND APPROVED BY THE OWNER'S REPRESENTATIVE.
3.	ALL DUCT SIZES SHOWN ARE SHEET METAL SIZES AND DON'T ACCOUNT FOR INSULATION. INSULATE ALL ROUND DUCTS EXTERNALLY, EXCEPT EXHAUST DUCTS, WITH 2" FIBERGLASS INSULATION WITH VAPOR BARRIER. INSULATE ALL RECTANGULAR DUCT WITH 1"-THICK, 1-1/2 LB. DENSITY DUCT LINER. TAPE ALL JOINTS.
4.	PROVIDE SPIN-IN FITTINGS AT ALL FLEXIBLE DUCT RUN OUTS TO DIFFUSERS (NO EXTRACTOR) AND DAMPER, TYPICAL UNLESS NOTED OTHERWISE ON PLAN.
5.	MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE 5'-0".
6.	ALL PIPING SUBJECT TO THERMAL EXPANSION AND/OR CONTRACTION THAT PENETRATES A SMOKE, FIRE, OR FIRE/SMOKE WALL, PARTITION, OR FLOOR SLAB SHALL BE SUITABLY SLEEVED AND FIRE-SAFED.
7.	METAL DUCTS WHICH PENETRATE 1 HOUR RATED FIRE WALLS AND ARE LESS THAN 100 SQUARE INCHES SHALL EXTEND A MINIMUM OF 5 FEET ON BOTH SIDES OF THE WALL WITHOUT AN OPENING (TO PRECLUDE THE REQUIREMENT OF A FIRE DAMPER). DUCTWORK SHALL IN NO CASE BE LIGHTER THAN 24 GAUGE STEEL.
8.	PROVIDE IDENTIFICATION OF THE LOCATION OF ALL FIRE AND BALANCING DAMPERS. IDENTIFICATION TAGS SHALL BE AFFIXED TO THE WALLS OR CEILINGS AND SHALL BE VISIBLE FROM THE OCCUPIED SPACE.
9.	PROVIDE ORANGE TAGS ON ALL VOLUME AND BALANCING DAMPERS ABOVE THE CEILING. TAGS AND DAMPER HANDLES SHALL BE VISIBLE AND ACCESSIBLE FOR THE TEST & BALANCE AGENCY.
10.	ALL PIPING SHALL BE SUPPORTED WITH COMMERCIAL MANUFACTURED CLAMPS. PROVIDE ISOLATION SLEEVES TO PREVENT CONTACT OF DISSIMILAR METALS.
11.	INSTALL ALL EQUIPMENT IN STRICT ACCORDANCE WITH THE MANUFACTURERS' INSTRUCTIONS AND RECOMMENDATIONS. PROVIDE VIBRATION ISOLATION DEVICES AND FLEXIBLE CONNECTIONS FOR ALL MOVING MACHINERY.
12.	CONTRACTOR TO PROVIDE ALL SUPPLEMENTARY STEEL REQUIRED TO SUSPEND MECHANICAL EQUIPMENT AND MATERIALS.
13.	ALL INSULATION SHALL BE FIRE RATED IN ACCORDANCE WITH NFPA 90A 50/25 SMOKE DEVELOPMENT AND FLAME SPREAD REQUIREMENTS. INSULATION "R" VALUES SHALL COMPLY APPLICABLE ENERGY CODE.
14.	MOUNT ALL SPACE THERMOSTATS AND/OR SENSORS 4.5 FEET ABOVE THE FLOOR, UNLESS OTHERWISE NOTED.
15.	INSTALL DUCT MOUNTED SMOKE DETECTORS (FURNISHED BY DIVISION 16) IN SUPPLY AIR DUCTWORK CONNECTED TO EACH A/C UNIT. WIRE DUCT MOUNTED SMOKE DETECTORS SUCH THAT ACTIVATION WILL DE-ENERGIZE AIR HANDLING UNIT FAN. LOCATE DUCT MOUNTED SMOKE DETECTORS THE REQUIRED DISTANCE DOWNSTREAM FROM BENDS OR INLETS AS RECOMMENDED BY THE MANUFACTURER.
16.	SEE ELECTRICAL DRAWINGS FOR ELECTRICAL CHARACTERISTICS OF MECHANICAL EQUIPMENT.
17.	UNLESS OTHERWISE NOTED, INSTALL ALL DUCTWORK AS HIGH AS POSSIBLE, TIGHT TO THE BOTTOM OF THE STRUCTURE. COORDINATE ELEVATION AND LOCATION WITH RAIN LEADERS, WATER PIPING, PLUMBING VENTS, AND MAJOR ELECTRICAL CONDUITS OR CABLE TRAY.
18.	PROVIDE DRAIN P-TRAPS IN THE CONDENSATE LINES AT ALL AIR HANDLING UNITS.
19.	ROUTE FULL SIZE PVC DRAIN PIPE FROM EACH RTU (1" MIN) DRAIN PAN AND FROM EACH FCU (3/4" MIN) TO RESPECTIVE FLOOR DRAIN OR TO DAYLIGHT WITH AIR GAP. INSULATE WITH 3/4" ARMSTRONG "ARMAFLEX" INSULATION.
20.	THE ENGINEER HAS MADE AN EXTENSIVE EFFORT TO IDENTIFY ABOVE CEILING CONFLICTS. THE CONTRACTOR IS RESPONSIBLE TO CHECK FIELD CONDITIONS PRIOR TO BIDDING AND REPORT ANY PROBLEMS/CONFLICTS TO THE ENGINEER WITHIN 2 DAYS OF DISCOVERY. ANY CHANGES RESULTING FROM CONDITIONS ARISING IN THE FIELD WHICH WERE NOT BROUGHT TO THE ENGINEER'S ATTENTION ARE TO BE MADE BY THIS CONTRACTOR WITH NO ADDITIONAL COST TO THE OWNER.
21.	ALL OUTSIDE AIR INTAKES SHALL BE A MINIMUM OF 10 FEET FROM ANY EXHAUST FANS OR PLUMBING VENTS.
22.	ALL WORK IS TO BE FREE OF DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST TO THE OWNER.
23.	UPON COMPLETION OF THE WORK UNDER THIS CONTRACT, THE CONTRACTOR SHALL REMOVE ALL TOOLS, APPLIANCES, SURPLUS MATERIALS, AND SCRAP. ALL IDENTIFIED EXISTING EQUIPMENT TO BE REMOVED SHALL BE TURNED OVER TO THE OWNER.
24.	WHEN CONFLICTS OCCUR IN SPECIFICATIONS OR IN THE DRAWINGS, OR BETWEEN EITHER, THE ITEMS OF GREATER QUANTITY OR HIGHER COST SHALL BE PROVIDED.
25.	THE CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES IN ORDER TO AVOID CONFLICTS.
26.	PROVIDE BALANCING DAMPER IN EACH BRANCH CONNECTION.
27.	ALL DUCTWORK INSTALLED ON THIS PROJECT SHALL BE OF SHEET METAL CONSTRUCTION. DUCTWORK SHALL BE FABRICATED AND CONSTRUCTED IN ACCORDANCE WITH SMACNA REQUIREMENTS.
28.	ALL ROOF ATTACHED EQUIPMENT AND APPURTENANCES INCLUDED IN THE SCOPE OF THIS PROJECT ARE REQUIRED TO BE SECURED TO THE UNDERLYING BUILDING STRUCTURE. THE FASTENING SYSTEMS SHALL BE INSTALLED TO RESIST THE WIND PRESSURES ON THE EQUIPMENT AS DETERMINED IN ACCORDANCE WITH THE CURRENT BUILDING CODE.
29.	MECHANICAL CONTRACTOR SHALL PROVIDE NAMEPLATE INFO TO THE FACILITY MANAGER FOR ALL FAN COILS, CONDENSING UNITS, RTU'S, AND EXHAUST FANS.

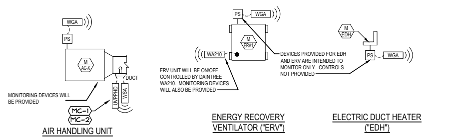


01 FLOOR PLAN—MECHANICAL

SCALE: 1/4"=1'-0"

MECHANICAL CONTROL PLAN NOTES	
MC-1	PROVIDE SUPPLY DUCT PROBE TEMPERATURE SENSOR FOR EACH MECHANICAL UNIT SUPPLY DUCT. HARDWARE SUPPLIED BY DAINTREE.
MC-2	PROVIDE HUMIDITY SENSOR WIRED VIA LOW VOLTAGE TO WSA10 FOR MONITORING ONLY WHEN REFERENCED ON BID DOCUMENTS. REFER TO MECHANICAL EQUIPMENT SCHEDULE OR PLAN NOTES. HARDWARE SUPPLIED BY DAINTREE
MC-3	PROVIDE BMS WIRELESS THERMOSTAT AT EACH VRF INDOOR UNIT. THERMOSTAT ADAPTER MAY BE REQUIRED - VERIFY WITH UNIT MANUFACTURER. SCREWED TO DEMOUNTABLE PARTITION PANEL; CABLE ROUTED THRU MULLION TO CEILING. HARDWARE SUPPLIED BY DAINTREE. MECHANICAL ENGINEER SHALL VERIFY WITH MANUFACTURER USING DAINTREE THERMOSTAT INSTALL GUIDE COMPATIBILITY AND INTERFACE REQUIRED
MC-4	PROVIDE HARDWIRED EXTERIOR TEMPERATURE SENSOR WITH DAINTREE WGA100 AND WSA10 MOUNTED IN THE INTERIOR OF BUILDING FOR MONITORING. HARDWARE SUPPLIED BY DAINTREE
MC-5	PROVIDE REMOTE ROOM TEMPERATURE SENSOR PER MECHANICAL UNIT WHERE THERMOSTAT IS REMOTE. SCREWED TO DEMOUNTABLE PARTITION PANEL; CABLE ROUTED THRU MULLION TO CEILING. HARDWARE SUPPLIED BY DAINTREE.
MC-6	REFER TO LIGHTING PLAN FOR EXHAUST FAN CONTROL
MC-7	DATA ROOM EXHAUST FAN EF-2 IS CONTROLLED BY NON-DAINTREE HARDWIRED REVERSE THERMOSTAT PROVIDED BY ELECTRICAL CONTRACTOR
MC-8	ZONE CONTROL TO BE AVERAGED ACROSS THERMOSTAT AND TEMPERATURE SENSOR
MC-9	ZONE CONTROL THRU REMOTE TEMPERATURE SENSOR ONLY.
MC-10	ZONE CONTROL TO BE AVERAGED ACROSS THERMOSTAT AND TEMPERATURE SENSOR DURING BUSINESS HOURS. ZONE CONTROL THRU THERMOSTAT ONLY DURING OFF-HOURS

MECHANICAL CONTROL GENERAL NOTES	
1	FOR VARIABLE REFRIGERANT FLOW (VRF) EQUIPMENT, PROVIDE UNIT MANUFACTURER'S 24V THERMOSTAT INTERFACE ACCESORY
2	REFER TO ELECTRICAL PLANS FOR HARDWIRED FAN/LIGHT CONTROL AND TIMERS
3	SOME HVAC EQUIPMENT MAY HAVE CONDENSATE PUMPS AND/OR SOLENOID VALVES THAT WILL REQUIRE A WIRELESS LEAK DETECTOR AND WGA100 FOR MONITORING. THIS DOES NOT INTERFACE WITH THE EQUIPMENT FOR SHUTDOWN/CONTROL. REFER BID DOCUMENTS TO MECHANICAL EQUIPMENT SCHEDULE OR PLAN NOTES FOR MORE DETAILS



AIR HANDLING UNIT

ENERGY RECOVERY VENTILATOR ("ERV")

ELECTRIC DUCT HEATER ("EDH")

02 TYP. MISC. MECHANICAL EQUIPMENT MONITORING AND CONTROL

SCALE: 1/4"=1'-0"

HVAC SEQUENCE OF OPERATIONS

OCCUPIED AND UNOCCUPIED OPERATION
- THE TEMPERATURE CONTROL SYSTEM SHALL BE SET FOR OCCUPIED AND UNOCCUPIED HOURS.
- SET A/C BLOWER FAN TO "ON" POSITION DURING OCCUPIED MODE. SET A/C BLOWER FAN TO "AUTO" DURING UNOCCUPIED MODE.
- DURING THE OCCUPIED HOURS THE SPACE SHALL BE MAINTAINED AT: 70° F HEATING AND 75° F COOLING. 100% OA UNIT (ERV-1) SHALL BE ON.
- DURING UNOCCUPIED PERIODS, THE SPACE TEMPERATURE SHALL MAINTAIN (ALL MONTHS) 65° F HEATING AND 80° F COOLING. 100% OA UNIT (ERV-1) SHALL BE OFF.
- MORNING WARM UP: PROVIDE A MORNING WARM UP MODE, ENGAGE OCCUPIED MODE (1) ONE HOUR PRIOR TO STORE OPENING. WARM-UP MODE START-UP MAY BE ADJUSTED TO OWNERS DESIRED TIME INTERVAL.

CEILING DUCTED AIR HANDLING UNITS
- UPON RECEIVING A SIGNAL FROM THE TEMPERATURE CONTROL SYSTEM FOR OCCUPIED HOURS, THE VRF SYSTEM SHALL ENERGIZE AND REMAIN ON DURING OCCUPIED HOURS.
- THE OUTSIDE 100% OA UNIT (ERV-1) SHALL REMAIN CLOSED FOR MORNING WARM-UP UNTIL THE OCCUPIED HOURS ARE REACHED, AND THEN WILL OPEN.
- THE TEMPERATURE CONTROL SYSTEM SHALL MAINTAIN THE COOLING AND HEATING SETPOINTS AS INDICATED ABOVE FOR OCCUPIED AND UNOCCUPIED OPERATION.

100% OA UNIT (ERV-1)
- 100% OA UNIT SHALL ENERGIZE AND REMAIN ON DURING OCCUPIED HOURS AND POWER OFF DURING UNOCCUPIED HOURS. DURING COOLING AND HEATING MODE, ERV-1 UNIT SHALL MAINTAIN SUPPLY AIR TEMPERATURE AT 80°F SUMMER / 60°F INTER(ADJ.). SUPPLY AIR DUCT SHALL DISTRIBUTE CONDITIONED VENTILATION AIR TO EACH CEILING DUCTED UNITS' RETURN AIR PLENUM. THE AMOUNT OF VENTILATION AIR TO EACH UNIT SHALL MEET ASHRAE 62 MINIMUM REQUIREMENT.

CO^2 SENSOR (OFFICES, CONF. ROOM):
- SET TO ENGAGE AUDIO/VISUAL ALARM AND/OR DAINTREE CONTROL SYSTEM. MONITOR CO^2 CONCENTRATIONS WITHIN ALL DENSELY OCCUPIED SPACES. CO^2 MONITORS MUST HAVE AN AUDIBLE OR VISUAL INDICATOR. IF THE SENSED CO^2 CONCENTRATION EXCEEDS THE SETPOINT OF 1000 PPMV BY MORE THAN 10%.

24-HOUR VESTIBULE (AC-1)
- THE TEMPERATURE CONTROL SYSTEM SHALL BE SET FOR THE SPACE TO BE MAINTAINED AT 75°F (ADJ.) IN THE COOLING MODE AND 70°F (ADJ.) IN THE HEATING MODE. 24/7.

24-HOUR DATA ROOM (AC-10)
- THE TEMPERATURE CONTROL SYSTEM SHALL BE SET FOR THE SPACE TO BE MAINTAINED AT 72°F (ADJ.) IN THE COOLING MODE AND IF PROVIDED, 68°F (ADJ.) IN THE HEATING MODE. 24/7.

NOTES BY SYMBOL: (#)

1. HVAC VRF SYSTEM CONTROL INTERFACE AND ERV-1 HMI CONTROLLER.
2. WALL MOUNTED REMOTE TEMPERATURE SENSOR.
3. CEILING MOUNTED REMOTE TEMPERATURE SENSOR.
4. 10X10 EXHAUST DUCT UP TO EXHAUST FAN EF-1 ON ROOF.
5. INSTALL CONDENSATE PUMP IF NOT INTEGRAL WITH UNIT AND EXTEND TUBING TO CONDENSATE MAIN PIPE, SEE PLAN. CONNECT INTO TOP OF CONDENSATE MAIN PIPE.
6. AHU MOUNTED HORIZONTAL ABOVE CEILING, TIGHT TO STRUCTURE.
7. WALL MOUNTED UNIT, REFER TO ARCHITECT FOR MOUNTING HEIGHT.
8. CONDENSATE DRAIN PIPE DOWN IN WALL AND OUT TO MS.
9. 10"Φ CIRCULATION AIR DUCT TO TERMINATE ABOVE CEILING..
10. 12"X8" SIDEWALL TRANSFER GRILLE MOUNTED LOW (TYPE 'B'). PROVIDE FIRE DAMPER AND BACKDRAFT DAMPER, REFER TO ARCHITECT FOR DETAIL AND ADDITIONAL INFORMATION.
11. 1" CONDENSATE DRAIN DOWN IN WALL AND OUT TO LAV P-TRAP TAIL PIECE.
12. RUN DUCT UP BETWEEN JOISTS OR THRU JOISTS WEBS.
13. 12X12 FRESH AIR INTAKE DUCT UP THRU ROOF TO VENTILATOR CAP ON ROOF CURB. VENTILATOR CAP EQUAL TO COOK MODEL "TRE".
14. CO^2 SENSOR MOUNTED AT 44" A.F.F.. SET TO ENGAGE AUDIO/VISUAL ALARM. MONITOR CO^2 CONCENTRATIONS WITHIN ALL DENSELY OCCUPIED SPACES. CO^2 MONITORS MUST HAVE AN AUDIBLE OR VISUAL INDICATOR. IF THE SENSED CO^2 CONCENTRATION EXCEEDS THE SETPOINT OF 1000 PPMV BY MORE THAN 10%.
15. BMS HARDWIRED CO2 SENSOR: BAPI #BA/AQX-D WIRED TO A WSA10 BY DAINTREE.
16. CEILING OR WALL MOUNTED LEAK DETECTOR SENSOR WIRED VIA WAPM IN DATA ROOM BY DAINTREE.

PLAN NOTE:

1. ROUTING OF MECHANICAL DUCT WORK IS DIAGRAMMATICAL. THE CONTRACTOR SHALL SURVEY THE ACTUAL CONDITIONS OF CONSTRUCTION AND MODIFY THE EXACT ROUTING AS NECESSARY TO ACHIEVE THE DESIGN INTENT.
2. CONTRACTOR SHALL COORDINATE WITH THE ARCHITECTURAL REFLECTED CEILING PLAN FOR DIFFUSER LENGTHS, 6', 5', 4', 3', OR 2'/ 4' IN OFFICES / 12' IN VESTIBULE AND CONTINUOUS IN CONFERENCE ROOM. VERIFY DIFFUSER END CONDITIONS, STRAIGHT, MITERED OR FLANGED END. PROVIDE BLANK OFF FOR ALL IN-ACTIVE SECTIONS OF DIFFUSER.
3. PROVIDE AIR HANDLING UNITS WITH MERV 13 FILTERS. DURING CONSTRUCTION MERV 11 FILTERS MAY BE USED.

MEP DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE USED FOR SCALING

Seal

STATE OF TEXAS
Richard L. Norris
100089
REGISTERED
PROFESSIONAL ENGINEER

The seal on this document was authorized by Richard L. Norris, P.E. 100089 on the date shown below.

August 01, 2024
Project # 2211

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REVISIONS

DATE ISSUED:	AUGUST 01, 2024
JOB #:	2023058
SHEET NAME:	MECHANICAL PLAN
SHEET :	M2.01

National TAB

Project: Chase Bank (Ft. Worth, TX)

System/Unit: Split Sys Furnace

Asset: AC-1 AREA:101

Unit Data		
	Design	**Actual**
MFG	NA	DAIKIN
Model Num	NA	FDMQ18WVJU9
Serial Num	-	E010679
Configuration	-	HORIZONTAL
Filter Size Size 1	-	20X8X4.5 / 2

Motor Data		
	Design	**Actual**
Motor MFG	-	INTERTEK
Horsepower	-	0.31
Phase	-	1
Voltage	-	208
Amperage	-	0.84

Test Data		
	Design	**Actual**
SF CFM	500	454
Motor Speed SetPt	-	HIGH
RL Voltage	208	208
RL Amperage	0.84	0.3
RA CFM	450	409
OA CFM	50	45

Performance Data		
	Design	**Actual**
Suction ESP	-	-0.07
Discharge ESP	-	0.12
Total ESP	-	0.19

Completed By: Bayley Morvant on 09/16/2025

National TAB

Project:Chase Bank (Ft. Worth, TX)

Split Sys Furnace

Diffuser Supply (GRD)

AC-1/101

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
SGRD1	101	D	10	250	178	226	90.4
SGRD2	101	D	10	250	144	228	91.2
Total				500	322	454	90.8%

National TAB

Project: Chase Bank (Ft. Worth, TX)

System/Unit: Split Sys Furnace

Asset: AC-2 AREA:106

Unit Data		
	Design	**Actual**
MFG	NA	DAIKIN
Model Num	NA	FXMQ18TBVJU
Serial Num	-	E000341
Configuration	-	HORIZONTAL
Filter Size Size 1	-	20X8X4.5 / 2

Motor Data		
	Design	**Actual**
Motor MFG	-	INTERTEK
Horsepower	-	0.31
Phase	1	1
Voltage	208	208
Amperage	-	1.5

Test Data		
	Design	**Actual**
SF CFM	400	420
Motor Speed SetPt	-	MEDIUM
RL Voltage	208	210
RL Amperage	1.5	0.4
RA CFM	355	371
OA CFM	45	49

Performance Data		
	Design	**Actual**
Suction ESP	-	-0.14
Discharge ESP	-	0.06
Total ESP	-	0.20

Completed By: Bayley Morvant on 11/01/2025

National TAB

Project:Chase Bank (Ft. Worth, TX)

Split Sys Furnace

Diffuser Supply (GRD)

AC-2/106

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
SGRD1	107	A	10	100	97	107	107.0
SGRD2	106	A	10	150	212	154	102.7
SGRD3	106	A	10	150	226	159	106.0
Total				400	535	420	105%

National TAB

Project: Chase Bank (Ft. Worth, TX)

System/Unit: Split Sys Furnace

Asset: AC-3 AREA:118

Unit Data		
	Design	**Actual**
MFG	NA	DAIKIN
Model Num	NA	FXMQ30TBVJU
Serial Num	-	E000186
Configuration	-	HORIZONTAL
Filter Size Size 1	-	27X8X4.5 / 2

Motor Data		
	Design	**Actual**
Motor MFG	-	INTERTEK
Horsepower	-	0.49
Phase	1	1
Voltage	208	208
Amperage	-	2.4

Test Data		
	Design	**Actual**
SF CFM	600	556
Motor Speed SetPt	-	HIGH
RL Voltage	208	210
RL Amperage	2.4	0.9
RA CFM	535	488
OA CFM	65	68

Performance Data		
	Design	**Actual**
Suction ESP	-	-0.22
Discharge ESP	-	0.32
Total ESP	-	0.54

Completed By: Bayley Morvant on 11/01/2025

National TAB

Project:Chase Bank (Ft. Worth, TX)

Split Sys Furnace

Diffuser Supply (GRD)

AC-3/118

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
SGRD1	118	D	10	300	223	285	95.0
SGRD2	118	D	10	300	206	271	90.3
Total				600	429	556	92.67%

National TAB

Project: Chase Bank (Ft. Worth, TX)

System/Unit: Split Sys Furnace

Asset: AC-4 AREA:123

Unit Data		
	Design	**Actual**
MFG	NA	DAIKIN
Model Num	NA	FXMQ48TBVJU
Serial Num	-	E000131
Configuration	-	HORIZONTAL
Filter Size Size 1	-	27X8X4.5 / 2

Motor Data		
	Design	**Actual**
Motor MFG	-	INTERTEK
Horsepower	-	0.49
Phase	1	1
Voltage	208	208
Amperage	-	2.9

Test Data		
	Design	**Actual**
SF CFM	1100	1083
Motor Speed SetPt	-	HIGH
RL Voltage	208	209
RL Amperage	2.9	1.4
RA CFM	1025	1004
OA CFM	75	79

Performance Data		
	Design	**Actual**
Suction ESP	-	-0.22
Discharge ESP	-	0.21
Total ESP	-	0.43

Completed By: Bayley Morvant on 11/01/2025

National TAB

Project:Chase Bank (Ft. Worth, TX)

Split Sys Furnace

Diffuser Supply (GRD)

AC-4/123

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
SGRD1	123	D	10	250	144	240	96.0
SGRD2	122	D	10	175	149	168	96.0
SGRD3	122	D	10	175	167	180	102.9
SGRD4	121	D	10	250	157	251	100.4
SGRD5	119	D	10	250	196	244	97.6
Total				1100	813	1083	98.45%

National TAB

Project: Chase Bank (Ft. Worth, TX)

System/Unit: Split Sys Furnace

Asset: AC-5 AREA:102

Unit Data		
	Design	**Actual**
MFG	NA	DAIKIN
Model Num	NA	FXMQ48TBVJU
Serial Num	-	E000133
Configuration	-	HORIZONTAL
Filter Size Size 1	-	27X8X4.5 / 2

Motor Data		
	Design	**Actual**
Motor MFG	-	INTERTEK
Horsepower	-	0.49
Phase	-	1
Voltage	-	208
Amperage	-	2.9

Test Data		
	Design	**Actual**
SF CFM	1000	1006
Motor Speed SetPt	-	HIGH
RL Voltage	208	210
RL Amperage	2.9	1.6
RA CFM	815	813
OA CFM	185	193

Performance Data		
	Design	**Actual**
Suction ESP	-	-0.19
Discharge ESP	-	0.11
Total ESP	-	0.30

Completed By: Bayley Morvant on 11/01/2025

National TAB

Project:Chase Bank (Ft. Worth, TX)

Split Sys Furnace

Diffuser Supply (GRD)

AC-5/102

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
SGRD1	102	D	8	125	145	126	100.8
SGRD2	102	D	8	125	91	123	98.4
SGRD3	102	D	8	125	136	119	95.2
SGRD4	102	D	8	125	38	120	96.0
SGRD5	102	D	8	125	156	129	103.2
SGRD6	120	D	8	125	139	135	108.0
SGRD7	120	D	8	125	141	129	103.2
SGRD8	120	D	8	125	122	125	100.0
Total				1000	968	1006	100.6%

National TAB

Project: Chase Bank (Ft. Worth, TX)

System/Unit: Split Sys Furnace

Asset: AC-6 AREA:115

Unit Data		
	Design	**Actual**
MFG	NA	DAIKIN
Model Num	NA	FXMQ36TBVJU
Serial Num	-	E003375
Configuration	-	HORIZONTAL
Filter Size Size 1	-	27X8X4.5 / 2

Motor Data		
	Design	**Actual**
Motor MFG	-	INTERTEK
Horsepower	-	0.49
Phase	-	1
Voltage	-	208
Amperage	-	2.5

Test Data		
	Design	**Actual**
SF CFM	800	769
Motor Speed SetPt	-	HIGH
RL Voltage	208	212
RL Amperage	2.5	1.0
RA CFM	740	705
OA CFM	60	64

Performance Data		
	Design	**Actual**
Suction ESP	-	-0.21
Discharge ESP	-	0.16
Total ESP	-	0.37

Completed By: Bayley Morvant on 11/01/2025

National TAB

Project:Chase Bank (Ft. Worth, TX)

Split Sys Furnace

Diffuser Supply (GRD)

AC-6/115

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
SGRD1	115	D	10	250	195	226	90.4
SGRD2	116	D	10	200	178	207	103.5
SGRD3	116	D	10	100	125	91	91.0
SGRD4	117	D	10	250	238	245	98.0
Total				800	736	769	96.12%

National TAB

Project: Chase Bank (Ft. Worth, TX)

System/Unit: Split Sys Furnace

Asset: AC-7 AREA:114

Unit Data		
	Design	**Actual**
MFG	NA	DAIKIN
Model Num	NA	FXMQ30TBVJU
Serial Num	-	E002484
Configuration	-	HORIZONTAL
Filter Size Size 1	-	27x8x4.5 / 2

Motor Data		
	Design	**Actual**
Motor MFG	-	INTERTEK
Horsepower	-	0.49
Phase	-	1
Voltage	-	208
Amperage	-	2.4

Test Data		
	Design	**Actual**
SF CFM	600	644
Motor Speed SetPt	-	HIGH
RL Voltage	208	209
RL Amperage	-	0.8
RA CFM	520	560
OA CFM	80	84

Performance Data		
	Design	**Actual**
Suction ESP	-	-0.18
Discharge ESP	-	0.19
Total ESP	-	0.37

Completed By: Bayley Morvant on 11/01/2025

National TAB

Project:Chase Bank (Ft. Worth, TX)

Split Sys Furnace

Diffuser Supply (GRD)

AC-7/114

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
SGRD1	103	D	10	175	122	192	109.7
SGRD2	105	D	10	125	177	136	108.8
SGRD3	103	D	10	175	145	190	108.6
SGRD4	105	D	10	125	196	126	100.8
Total				600	640	644	107.33%

National TAB

Project: Chase Bank (Ft. Worth, TX)

System/Unit: Split Sys Furnace

Asset: AC-8 AREA:111

Unit Data		
	Design	**Actual**
MFG	NA	DAIKIN
Model Num	NA	FXMQ30TBVJU
Serial Num	-	E001574
Configuration	-	HORIZONTAL
Filter Size Size 1	-	27X8X4.5 / 2

Motor Data		
	Design	**Actual**
Motor MFG	-	INTERTEK
Horsepower	-	0.49
Phase	-	1
Voltage	-	208
Amperage	-	2.4

Test Data		
	Design	**Actual**
SF CFM	600	587
Motor Speed SetPt	-	MEDIUM
RL Voltage	208	210
RL Amperage	2.4	0.4
RA CFM	515	498
OA CFM	85	89

Performance Data		
	Design	**Actual**
Suction ESP	-	-0.08
Discharge ESP	-	0.10
Total ESP	-	0.18

Completed By: Bayley Morvant on 11/01/2025

National TAB

Project:Chase Bank (Ft. Worth, TX)

Split Sys Furnace

Diffuser Supply (GRD)

AC-8/111

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
SGRD1	113	A	6	50	114	49	98.0
SGRD2	110	A	8	200	200	193	96.5
SGRD3	112	A	6	50	125	51	102.0
SGRD4	111	A	6	100	136	109	109.0
SGRD5	110	A	8	200	199	185	92.5
Total				600	774	587	97.83%

National TAB

Project: Chase Bank (Ft. Worth, TX)

System/Unit: Split Sys Furnace

Asset: AC-9 AREA:114

Unit Data		
	Design	**Actual**
MFG	NA	DAIKIN
Model Num	NA	FDMQ12WVJU9
Serial Num	-	E008693
Configuration	-	HORIZONTAL
Filter Size Size 1	-	27X8X4.5

Motor Data		
	Design	**Actual**
Motor MFG	-	INTERTEK
Horsepower	-	0.17
Phase	-	1
Voltage	-	208
Amperage	-	0.63

Test Data		
	Design	**Actual**
SF CFM	300	313
Motor Speed SetPt	-	HIGH
RL Voltage	208	209
RL Amperage	0.63	0.3
RA CFM	275	286
OA CFM	25	27

Performance Data		
	Design	**Actual**
Suction ESP	-	-0.07
Discharge ESP	-	0.12
Total ESP	-	0.19

Completed By: Bayley Morvant on 11/01/2025

National TAB

Project:Chase Bank (Ft. Worth, TX)

Split Sys Furnace

Diffuser Supply (GRD)

AC-9/114

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
SGRD1	114	A	10	300	313	313	104.3
Total				300	313	313	104.33%

National TAB

Project: Chase Bank (Ft. Worth, TX)

System/Unit: Energy Recovery Unit

Asset: ERV-1 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	OXYGEN 8
Model Num	NA	VENTUM-H05-2081-006
Serial Num	-	910004562223
Num Exh-Filters 1	-	1
Exh-Filter Size 1	-	16X16X2
Num OA-Filters 1	-	1
OA-Supply Size 1	-	16X16X2

Exhaust Fan Motor Data		
	Design	**Actual**
Horsepower	500W	0.67
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	2.50

OA Fan Motor Data		
	Design	**Actual**
Horsepower	500W	0.67
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	2.50

Exhaust Fan Test Data		
	Design	**Actual**
Exh-ERU CFM	600	650
Exh-ERU System SetPt	-	70%
RL Voltage	208	212
RL Amperage	2.5	1.6
Brake Horse Power	-	0.42

Exhaust Fan Performance Data		
	Design	**Actual**
Exh-ERU Filter Delta SP	-	0.22
Exh-ERU Wheel Delta SP	-	0.50
Exh-ERU Inlet T (db/wb)	-	78/62
Exh-ERU Discharge T (db/wb)	-	75/58
Exh-ERU Delta T	-	3

OA Fan Test Data		
	Design	**Actual**
OA-ERU CFM	620	653
Motor Frequency	-	96%
RL Voltage	208	213
RL Amperage	-	2.0

OA Fan Performance Data		
	Design	**Actual**
OA-ERU Filter Delta SP	-	0.18
OA-ERU Wheel Delta SP	-	0.74
OA-ERU Inlet T (db/wb)	-	73/56
OA-ERU Discharge T (db/wb)	-	76/61
OA-ERU Delta T	-	3

Completed By: Bayley Morvant on 11/01/2025

Notes:
[1] EXHAUST SIDE OF ERV-1 WAS CHANGED. NO DRAWINGS EXIST OF CHANGES. EF-1 WAS DELETED AND DIFFUSERS SERVED BY EF-1 NOW DUCTED TO EXHAUST/RETURN SIDE OF ERV-1. DESIGNS FOR THESE DIFFUSERS WERE KEPT AND PREVIOUS SINGLE RETURN DIFFUSER FOR ERV-1 DESIGN WAS REDUCED TO REFLECT ADDED DIFFUSERS.
[2] NO DAMPERS SHOWN PER DRAWINGS, NONE INSTALLED. ERV-1 EXHAUST/RETURN WAS SET UP FOR TOTAL CFM.

Written By: Bayley Morvant on 11/01/2025

National TAB

Project:Chase Bank (Ft. Worth, TX)

Energy Recovery Unit

Diffuser Supply (GRD)

ERV-1/

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
SGRD1	AC-2 (106)	DUCT	6	45	120	49	108.9
SGRD2	AC-4 (123)	DUCT	6	75	58	79	105.3
SGRD3	AC-5 (104)	DUCT	8	185	142	193	104.3
SGRD4	AC-3 (117)	DUCT	6	65	61	68	104.6
SGRD5	AC-6 (115)	DUCT	6	60	77	64	106.7
SGRD6	AC-7 (114)	DUCT	6	80	49	84	105.0
SGRD7	AC-9 (114)	DUCT	5	25	59	27	108.0
SGRD8	AC-8 (111)	DUCT	6	85	63	89	104.7
Total				620	629	653	105.32%

Diffuser Ret/Exh (GRD)

ERV-1/

Asset								
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**FINAL CFM**	**% to design**
EGRD1	112	C	6	75		47	47	62.7
EGRD2	113	C	6	75		61	61	81.3
EGRD3	110	C	8	150		99	99	66.0
EGRD4	105	B	12	250		289	289	115.6
EGRD5	109	EF-3	6	50		154	154	308.0
Total				600		650	650	108.33%

National TAB

Project: Chase Bank (Ft. Worth, TX)

System/Unit: FAN - Exhaust

Asset: EF-2 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	[1]
Model Num	NA	[1]
Serial Num	-	[1]
Type	CEILING	CEILING

Motor Data		
	Design	**Actual**
Motor MFG	-	GREENHECK
Horsepower	351W	0.025
Motor Rpm	-	900
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	0.46

Test Data		
	Design	**Actual**
CFM	500	370 [2]
RL Voltage	115	121
RL Amperage	0.46	0.4
Suction ESP	-	-0.04
Discharge ESP	-	0.03
Total ESP	-	0.07
Brake Horse Power	-	0.02

Completed By: Bayley Morvant on 09/16/2025

Notes:
[1] NO ACCESS TO UNIT DATA TAG DUE TO DISCHARGE DUCT COVERING IT.
[2] UNIT OPERATING AT HIGHEST POSSIBLE SPEED. BACK DRAFT DAMPER FULLY OPEN.

Written By: Bayley Morvant on 09/16/2025

National TAB

Project: Chase Bank (Ft. Worth, TX)

System/Unit: FAN - Exhaust

Asset: EF-3 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	SP-A110-QD
Serial Num	-	26886203
Type	CEILING	CEILING

Motor Data		
	Design	**Actual**
Motor MFG	-	GREENHECK
Motor Rpm	-	950
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	0.19

Test Data		
	Design	**Actual**
CFM	50	46
RL Voltage	115	120
RL Amperage	0.19	0.20
Suction ESP	-	-0.01
Discharge ESP	-	0.01
Total ESP	-	0.02

Completed By: Bayley Morvant on 11/01/2025