

SUBMITTAL COVERSHEET **Nanuet UFSD –Phase 3 Projects**

Architect:
KSQ Architects
215 W 40th Street, 15th Floor
New York, NY 10018

Owner:
Nanuet Union Free School District
101 Church Street
Nanuet, NY 10954

Construction Manager:
Jacobs
One Penn Plaza, 54th floor
New York, NY 10019

Contractor: Joe Lombardo Plumbing & Heating of Rockland Inc

Contract: Ron Lombardo

Address: 321 Spook Rock Road Suite 109A
Suffern, New York 10901

Telephone: 845-357-6537

Fax: 845-357-8529

School Name: Nanuet Union Free School District Phase 3 Bond Projects @ Barr Middle School & Nanuet High School

Type of Submittal:

Re-submittal: [] No [] Yes

[] Shop Drawings	[] Product Data	[] Schedule	[] Sample	[] _____
[] Test Report	[] Certificate	[] Color Sample	[] Warranty	[] _____

Submittal Description:

testing and balancing

Product Name: _____

Manufacturer: _____

Subcontractor/ Supplier: DL FLOWTECH

References:

Spec. Section No.: 230593

Drawing No(s): _____

Paragraph: _____

Rm. or Detail No(s): _____

Architect's/ Engineer's Review Stamp

SAGE ENGINEERING ASSOCIATES, LLP

☒ Reviewed	☐ Furnish as Corrected
☐ Rejected	☐ Revise and Resubmit
☐ Submit Specified Item	

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all Work in a safe and satisfactory manner.

SAGE LOG NO. M-23

Date: 10/10/2023 By: J. Venditte

Contractor Review Statement:

These documents have been checked for accuracy and coordinated with job conditions and Contract requirements by this office and have been found to comply with the provisions of the Contract Documents.

Ronald J. Lombardo

10.9.23

Name:

Date:

Company Name:

Joe Lombardo Plumbing & Heating of Rockland Inc.

Remarks:



HVAC Testing and Balancing Submittal

Customer: Lombardo Plumbing & Heating

Project: Nanuet Union Free School District



October 29, 2023

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About the Company

In 1982 dL Flow Tech Inc. began with one person, founder Dennis LaVopa. We initially focused on providing quality TAB (Testing Adjusting Balancing) to contractors in the lower Hudson Valley. As time passed, dL Flow Tech grew not only in size but in experience, credibility, and reputation in the competitive HVAC industry. We expanded our business across the Tri-State region by building and maintaining strong relationships with quality contractors and engineers. We also increased the services offered from air and hydronic TAB, to sound measurement, retro commissioning, fire damper testing, duct leakage testing, pipe thickness testing and blower door testing. It has always been the focus of dL Flow Tech to not only maintain technical certifications but to always maintain relationships with clients who appreciate our work ethic. Always stressing the importance of quality, and client service, we have earned a reputation for trustworthy service for over three decades. While celebrating the past 38 years of service, we look forward to the changes and challenges in the future. Technology advances have led to improvements in safety and comfort within occupied environments. At the same time, the need for tighter environmental controls in public spaces, residences, and especially in mission critical areas such as health-care facilities, keeps increasing. As the industry changes and continues to move forward, we have not forgotten the basic business principles that brought us to where we are today. Credibility, honesty, and attentiveness to our customer's needs will always be our driving force. dL Flow Tech Co. continues to strive for excellence by maintaining its reputation for hard work and dependability. For more information about our company please visit our web site at www.dlflowtech.com.

Services:

- HVAC Test and Balance of Air and Hydronics
- HVAC Full System Survey's
- Duct Leakage Testing (Residential and Commercial)
- Blower Door Testing (Residential and Commercial)
- Sound Testing
- Fire Damper Testing
- Pipe Thickness Testing
- Data Logging

Professional Organization Membership

- ASHRAE: American Society of Heating, Refrigeration, Air Conditioning Engineers
- CCA: Construction Contractors Association
- SMACNA: Sheet Metal Air Conditioning Contractors, National Association
- NEBB: National Environmental Balancing Bureau
- TABB: Testing, Adjusting and Balancing Bureau

dL Flow Tech Team

- CEO/President: Dennis LaVopa
- Field Manager: Greg Lombardi (NEBB Certified)
Luke Fountain (NEBB Certified)
- Michael Cassese (Certified Technician)
- Steve Michael (Certified Technician)
- Kevin Obrien (Certified Technician)
- Michael Landsman (TAB Technician)
- Mandrell Narine (TAB Technician)
- Abby Macur (TAB Technician)

Notable Work History

New Construction

Project: Thomas Jefferson Hall - US Military Academy West Point, NY

Year: 2008

Customer: J. Kokolakis Contracting, Inc.

Description: 141,000 sq ft new library at west point campus with state of the art mechanical and control systems

Project: Regeneron Landmark at Eastview, 735 & 745 Old Saw Mill River Rd. Tarrytown, NY

Year: 2009

Customer: LJ Coppola Mechanical

Description: 230,000 sq ft. state-of-the-art complex is one of the largest corporate facilities to be built in Westchester County in recent years. The new facilities offer environmentally friendly design features, including a white roof to reflect heat, a high efficiency HVAC system, building layouts for laboratories and offices to maximize day lighting, a courtyard located between buildings that maximizes permeable surfaces to reduce water runoff, and extensive use of sustainable materials such as bamboo flooring and low volatility organic compounds

Project: New Research & Development Facility: Avon Products Inc. new \$100m global research and development center in Suffern, NY

Owner: Avon Products, Inc.

Year: 2004

Address: 1 Avon Place Suffern, NY

Customer: Skanska

Description: Test and Balance of 14 exhaust fans including dust collector system and fume hoods. Room pressurization, larger air handling units, 400 VAV boxes, along with the buildings hot water and chilled water systems and Duct Leakage Testing

Project: New Geo Chemistry Building – Columbia University

Year: 2007

Customer: Torcon Construction

Description: 67,000 square feet, two stories tall and houses more than 70 offices and 30 state-of-the-art laboratories for scientists, students and support staff

Project: The Hackley School Center for Wellness.

Customer: DP Wolff

Year: 2017

Description: The 115,000-sq-ft, two-story Walter C. Johnson Center for Health & Wellness was designed to be an athletic facility as well as the campus center for all students.

Project: Center for Science & Computation Bard College, Annandale on Hudson, NY 12504:

Customer: Ashley Mechanical Inc.

Year: 2005-2006

Description: A new 42,000 square-foot facility housing state-of-the-art science and computer laboratories, hi-tech classrooms, and a new 80-person auditorium

Project: SUNY Purchase Residence Hall:

Year: 2006

Description: New 96,000 square-foot residence hall designed as a 'college-town'. The four-story facility has 314 new beds, with a space for a bookstore, restaurant and student-related retail spaces. Exhaust fans, air handlers, hot water system, pumps, boilers, fan coil units. LEED Certified

Project: US Tobacco, Stamford CT

Year: 2007

Customer: ABM Heating and Air Conditioning

Description: Test and Balance a large multi-floor office space.

Project: DEP East of Hudson Commissioning: Valhalla, NY

Year: 2007

Customer: Turner Construction

Description: Commission new construction at the DEP new state of the art Green Facility in Valhalla, NY.

Project: Middletown High School \$130 million project

Proj#44-10-00-01-0-002-018

Middletown, NY

Customer: Bertussi Plumbing and Heating

Year: 2006

Description: Test and Balance new fan coils, pumps, chillers, boilers, AHU's, RTU's, UV's, exhaust fans

Project: Marist College

Hancock Center

Poughkeepsie, NY

Customer: Ashley Mechanical Inc

Year: 2010

Description: Test and balance of HVAC systems for new state of the art \$35 million, 57,000-square-foot facility.

Project: Northern Westchester Hospital
Emergency Expansion Project
Mt. Kisco, NY

Customer: Northern Westchester Hospital Center

Year: 2010

Description: Test and balance of HVAC systems in addition to commissioning for new emergency room wing.

Project: Metro North Design and Construction Service for the Harmon Shop

Customer: LJ Coppola

Year: 2009

Description: Test and balance of HVAC equipment for new coach shop, a locomotive shop, and a wheel true facility.

Project: NYC Transit Authority Bus Depot and Central Maintenance Facility

48-05 Grand Ave

Maspeth, NY 11378

Customer: Granite Construction Northeast, Inc.

Year: 2009

Description: NYCT Grand Ave Depot & Central Maintenance Facility was ranked #13 in the country for largest construction projects awarded, with a cost over \$250 million.

The Grand Avenue Bus Depot and Maintenance Facility in Maspeth is located on 5.5 acres and covers over 550,000 sq. ft. It is a state-of-the-art and environmentally friendly facility.

Project: Armed Forces Reserve Center Fort Hamilton, NY Training Building

Customer: Nelson Air Device

Year: 2010

Description: The project includes the 123,000-sf center, a 3,500-sf maintenance training building, and classrooms and arms rooms to support National Guard units and active-duty personnel.

Project: The New Stamford Hospital Center

Customer: Bonland Industries

Year: 2016

Description: Full TAB of an 11-story, 640,000-square-foot medical facility that will replace the hospital's aging main building on Shelburne Road.

Project: Mt Pleasant Expansion Regeneron North Campus 785 (South) and 795 (North)

Customer: AMX mechanical

Year: 2014

Description: The project added two new buildings with 300,000 square feet of laboratory and office space to the Regeneron complex at the Landmark at Eastview in the Town of Mount Pleasant in Westchester County, New York

Project: West Point Elementary School

Customer: Grundman Mechanical

Year: 2019

Description: New Multi-Story 95,000 sq ft. Elementary School located at West Point NY - Completed October 2019

Project: The New Vassar Hospital

Customer: Walsh Construction

Year: 2021

Description: Eight level 750,000 square feet half-billion-dollar project, with 264 patient rooms, 30 intensive care rooms, a dozen surgical suites, and a 66-room emergency department.

Project: Legoland New York

Customer: Thomas Kempton

Year: 2021

Description: 500 acre theme park consisting of multiple buildings throughout including restaurants and a new 250 bed hotel.

Project: Pepsi R&D Facility

Customer: Grodsky Mechanical

Year: 2019

Description: A brand new state of the art 3 story research and development building. 122,000 square foot of laboratory office and amenities.

Survey/ Retro Commission:

Project: Daronco Courthouse

White Plains, NY

Discovery Phase Testing

Customer: City of White Plains

Year: 2009

Description: Provide report of discovery phase investigation and data for your consulting mechanical engineer's review and recommendations.

Project: Park West High School

525 W 50th St.

New York, NY

Customer: New York City Schools

Year: 2008

Description: Working with contractors and engineers performing Discovery Phase Testing and troubleshooting of problem systems

Project: Benedictine Hospital

Customer: Benedictine Hospital Kingston NY

Year: 2008

Description: Discovery phase testing of prior to construction of major project which combines the use of two hospitals.

Project: New York Catholic Center
E 55th & 56th St.

New York NY

Customer: OLA Consulting Engineers

Year: 2008

Description: Trouble shooting problem air handlers in a 20-floor high rise building.

Project: Pepsi Concentrate and R&D LEED Discovery Phase Testing

350 Columbus Ave

Valhalla, NY

Customer: OLA Consulting Engineers

Year: 2009

Description: Test and evaluate approximately 70 Fans (exhaust and supply) for engineers during LEED accreditation.

Project: CIBA - BASF Specialty Chemicals

540 White Plains, RD

Tarrytown, NY

Customer: CIBA - BASF Specialty Chemicals

Year: 2010

Description: Rebalance of all existing systems at 540 White Plains Rd.

Project: New York Medical College BSB Survey

Customer: M/E Engineers

Year: 2021

Description: Complete survey of HVAC system serving the 122,000 square foot BSB building in order to assist design engineers for renovation project.

Project: North Rockland CSD

Customer: NRCSD

Year: 2020

Description: Complete survey and balance of HVAC systems serving 11 buildings across the school district prior to the opening of the 2020 school year.

Project: MTA Buildings NYC

Customer: Goldman Copeland

Year: 2020

Description: Survey outside air and exhaust airflow in 14 buildings across the 5 NYC boroughs.

Project: Herbert Lehman High School

Customer: NYC CSD

Year: 2020

Description: Work with a team to test, troubleshoot and adjust airflows throughout on existing AHU's prior to the opening of school.

Project: Putnam Norther Westchester BOCES

Customer: PNWB

Year: 2020

Description: Work with engineers to survey existing systems and adjust as needed prior to the opening of the 2020 school year.

Clients List

At dL Flow Tech we value our relationships with contractors, building owners and engineers. We strive to be client based. We want to maintain positive relationships and be part of a team, not just a one-time company. Over 40years we have built relationships with some of the best in the business.

- ABM HVAC: Hawthorne, NY
- Agency Construction: Mamaroneck, NY
- Ahearn Holtzman Inc. Port Chester, NY
- Albert Einstein College of Medicine: Bronx, NY
- American Heating and Cooling: Poughkeepsie, NY
- AMX Contracting: Pleasantville, NY
- AMI Services: Newburgh, NY
- Aptar: Congers NY
- AP Mechanical: Hawthorne NY
- Armistead Mechanical: Newburgh, NY
- Ashley Mechanical Inc.: Kingston, NY
- Atlantic Westchester: Bedford Hills, NY
- BASF Specialty Chemicals: Tarrytown NY
- Bertussi Plumbing and Heating: Pearl River, NY
- Bonland Industries: Wayne NJ
- Burke Rehabilitation: White Plains, NY
- Caremount Medical: Mt Kisco, NY
- Carey and Walsh: Hawthorne, NY
- CB Strain Mechanical Contractors: Poughkeepsie, NY
- CBK Consulting Engineers: Hopewell Junction NY
- C&F Consulting Engineers: White Plains NY
- Clean Air Quality Service: Hawthorne, NY
- Culinary Institute of America: Poughkeepsie, NY
- CRE Mechanical: Pearl River, NY
- Crothall Project Services Group, Lynbrook, NY
- Collado Engineering PC: Tarrytown, NY
- Columbia University Lamont Doherty: Palisades, NY
- DJ Air Conditioning: Marlboro, NY
- East Ramapo CSD: East Ramapo NY
- Elmsford Sheet Metal: Cortland, NY
- Grundman Mechanical: Hawthorne NY
- Goldman Copeland: New York NY
- Ginsburg Development Companies
- Hauser Brothers: Orangeburg, NY
- H&S Mechanical: Elizabeth NJ
- ICM Mechanical: Yonkers NY
- J&M HVAC: New Rochelle, NY
- Johnson Controls: Albany, NY
- Lawrence Hospital (NYP): Bronxville, NY
- LJ Coppola Inc.: Brewster, NY
- Lombardo Plumbing and Heating: Suffern, NY
- Markley Mechanical: Peekskill, NY

- Marist College: Poughkeepsie, NY
- MDS HVAC-R: Walden, NY
- Mengler Mechanical: Brewster, NY
- Montefiore Nyack Hospital Center: Nyack, NY
- Montefiore Medical Center, Bronx, NY
- New York City Schools: Long Island City, NY
- M/E Engineering: Schenectady NY
- Northern Dutchess Hospital: Poughkeepsie NY
- North Rockland CSD: North Rockland NY
- Northern Westchester Hospital Center: Mt Kisco, NY
- NYP Hudson Valley Hospital Center: Peekskill, NY
- Orange Regional Medical Center: Middletown, NY
- OLA Consulting Engineers: Hawthorne, NY
- Pomarico Design: Newburgh NY
- Phelps Memorial Hospital: Sleepy Hollow, NY
- Premier Comfort: Peekskill, NY
- Putnam NW BOCES: Yorktown NY
- Rockland County BOCES
- S&O Construction: Pleasant Valley NY
- S&L Plumbing: Port Chester NY
- Southeast Mechanical: Brewster, NY
- Southport Associates Engineering: Ridgefield CT
- Skanska USA
- St Johns Riverside Hospital: Yonkers NY
- St. Luke's Hospital: Newburgh and Cornwall NY
- Sarracco Mechanical Service: Stamford, CT
- Taconic Heating and Cooling: Cortlandt Manor NY
- Tietjen Venegas Consulting Engineers: Rye NY
- Titan Mechanical Services: Port Chester, NY
- Trane Co: Latham, NY
- Thermodynamics: Peekskill NY
- Thermodynamix: Ossining NY
- Unity Mechanical: Briarcliff, NY
- Vassar College: Poughkeepsie NY
- Vassar Medical Center (Nuvance): Poughkeepsie NY
- Westchester County Department of Public Works: White Plains, NY
- Westchester Medical Center: Valhalla, NY
- Westchester Surgery Center: Mt Kisco, NY
- Whiting Turner Construction
- White Plains Hospital Center: White Plains NY

Instrumentation

Instrumentation meets or exceeds the standards set by NEBB, calibration certificates are available upon request.

Rotating Measurement	0-500 RPM	=/- 2%	=/- 5RPM	Lazer Tachometer B59B8005 PLT 500
Air	-40 to 240 deg. F	+/- 1% of Reading	.2 deg. F	Shortridge / ADM 860 / M90266
Immersion	-40 to 240 deg. F	+/- 1% of Reading	.2 deg. F	Shortridge/ ADM 860 / M90266
Water	-40 to 240 deg. F	+/- 1% of Reading	.2 deg. F	Omega Model / 450 / 692478
Electrical Measurement	0-600 VAC 0-100 AMPS	+/- 2% of Reading	1 Volt .1 Amps	Fluke Electrical Tester T5600
Air Pressure Measurement	0-19" WG	+/- 5% of Reading	0.01- in wg < 1 in wg	Shortridge / AMD-860 / M90266
Air Velocity Measurement	50-3000 fpm	+/- 1% of reading	20 fpm	Alnor / Rotating Van Anemometer RVA+ / 312216
Humidity Measurement	10 to 90% RH	2% of reading	1%	Checkit Digital Psych/ 622
Air Volume	100 to 2000 cfm	+/- 5% of reading	Digital 1 cfm	Shortridge / AMD 860 / M90266
Pitot Tube	18 24 36 60	NA NA NA NA	NA NA NA NA	Dwyer / 160-18 3/16 std pitot Dwyer / 160-24 3/16 std pitot Dwyer / 160-36 3/16 std pitot Dwyer / 160-60 3/16 std pitot
Hydronic Pressure Measurement	-30" Hg to 60 psi 0 to 100 psi 0 to 200 psi	+/-1% of reading +/-1% of reading +/-1% of reading	.5 psi 1 psi 2.5 psi	Shortridge / HDM-300 / W 93092 Shortridge / HDM-300 / W 93092 Shortridge / HDM-300 / W 93092
Hydronic Differential Pressure Measurement	0-100 in. w.g. 0-100 ft. w.g.	+/- 2% of reading +/- 2% of reading	1 in. w.g. 1 ft. w.g.	Shortridge / HDM-300 / W 93092 Shortridge / HDM-300 / W 93092



Firm Certification

DL FLOW TECH, INC.

**HAS MET ALL REQUIREMENTS FOR NEBB CERTIFIED
STATUS IN THE FOLLOWING DISCIPLINE**

Testing, Adjusting and Balancing of Environmental Systems

2582

NEBB Certification Number

March 31, 2024

Expiration Date

A handwritten signature in black ink, appearing to read "Jon Chappard".

NEBB President

A handwritten signature in blue ink, appearing to read "Chris King".

NEBB President-Elect



Firm Certification

DL FLOW TECH, INC.

**HAS MET ALL REQUIREMENTS FOR NEBB CERTIFIED
STATUS IN THE FOLLOWING DISCIPLINE**

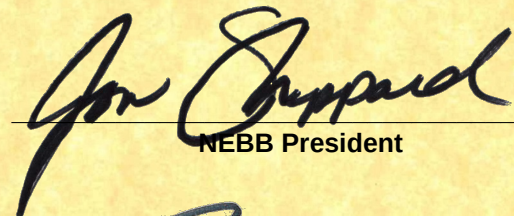
Sound Measurement

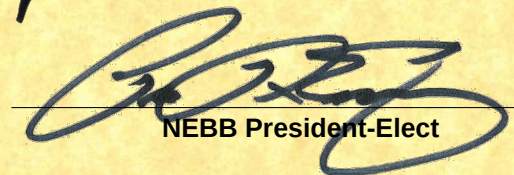
2582

NEBB Certification Number

March 31, 2024

Expiration Date


NEBB President


NEBB President-Elect



Firm Certification

DL FLOW TECH, INC.

**HAS MET ALL REQUIREMENTS FOR NEBB CERTIFIED
STATUS IN THE FOLLOWING DISCIPLINE**

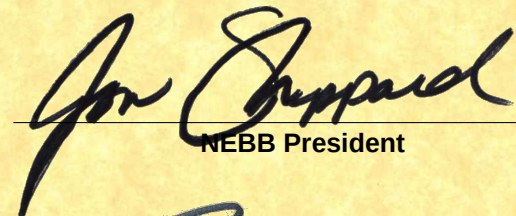
Whole Building Technical Commissioning of New Construction

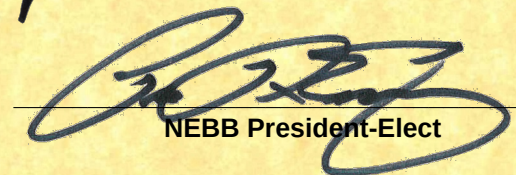
2582

NEBB Certification Number

March 31, 2024

Expiration Date


NEBB President


NEBB President-Elect



Certification

GREGORY FRANCIS LOMBARDI

**HAS MET ALL REQUIREMENTS FOR NEBB CERTIFIED PROFESSIONAL
STATUS IN THE FOLLOWING DISCIPLINE**

Testing, Adjusting and Balancing of Environmental Systems

This Certificate, as well as individual affiliation with a NEBB Certified Firm and associated NEBB Certification Stamp are REQUIRED to provide a NEBB Certified Report. Participation in the NEBB Quality Assurance Program requires the Certificant be affiliated with a NEBB Certified Firm

CP-24386

NEBB Certification Number

March 31, 2023

Expiration Date

A handwritten signature in black ink, reading "Jon Sheppard".

NEBB President

A handwritten signature in black ink, appearing to be "R. J. ...".

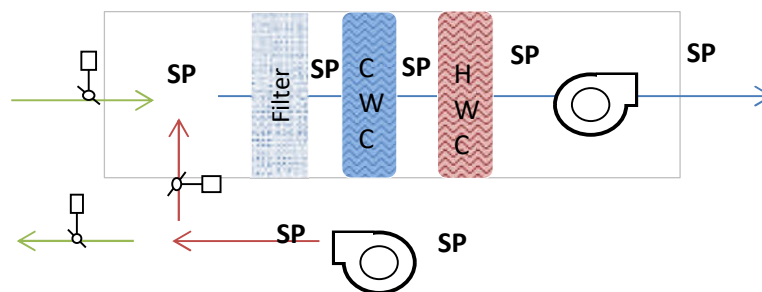
NEBB President-Elect

Equipment Summary

Fan #	Service	Rated CFM	Connected Load	Operating CFM	% of Design	Remarks
Air Handlers						
Return Fans						
Air Apparatus						
Exhaust Fans						

Performance Data

☐ New ☐ Exist ☐ Refurb	Supply Fan		Return /EF	
System				
Service				
Location				
Manufacturer				
Model				
Sheave Position				
Speed Control				
System SP Set Point			NA	
	RATED	OPERATING	RATED	OPERATING
Connected Load /Diversity				
Fan CFM				
Return CFM				
Outside Air CFM				
Exhaust Air CFM				
Total Static				
External Static Pressure				
Fan RPM				
Motor Manuf. / HP				
RPM				
Line Voltage				
Amperage				
Phase				
Brake HP				
Power Factor				
Motor Efficiency				
Service Factor				
Frame				
Remarks:				



OSA Damper Pos. _____
 OSA % of SA _____

	☐ New	☐ Exist	☐ Refurb	☐ New	☐ Exist	☐ Refurb	☐ New	☐ Exist	☐ Refurb	☐ New	☐ Exist	☐ Refurb
System												
Service												
Location												
Manufacturer												
Model/Size												
Fan Type												
Sheave Position												
Speed Control												
	Design	Actual	Design	Actual	Design	Actual	Design	Actual	Design	Actual		
Fan CFM												
Return CFM												
Outside Air CFM												
Fan Discharge SP												
Fan Suction SP												
Unit Inlet SP												
External SP												
Total SP												
Fan RPM												
	Design	Actual	Design	Actual	Design	Actual	Design	Actual	Design	Actual		
Motor Manuf./HP												
Motor RPM												
Line Voltage												
Phase												
Amperage												
Service Factor												
Remarks:												

	☐ New ☐ Exist ☐ Refurb	☐ New ☐ Exist ☐ Refurb	☐ New ☐ Exist ☐ Refurb	☐ New ☐ Exist ☐ Refurb
Fan Number				
Location				
Service				
Manufacturer				
Model/Size				
Fan Type				
Horsepower				
Safety Factor				
Volts/Phase				
Rated Amperage				
Actual Amperage				
Sheave Position				
Design Fan RPM				
Actual Fan RPM				
Design Static Pressure				
Actual Static Pressure				
Required CFM				
Actual CFM				
Remarks:				

[illegible]

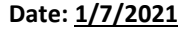
[illegible]

Terminal Box Performance Data

[illegible]

[illegible]

[illegible]



Sheet: OSA UV's

Report: 2020 Air Field Sheet

Pump Summary

[illegible]

Pump Performance Data

Pump No				Motor Mfg		
Manufacturer				Frame		
Size				HP		
Impeller				RPM		
Service				Design		Actual
	GPM	FT HD	BHP	Amps		
Design				Voltage / Phase		
Valve Open		0		Remarks: 		
Discharge						
Suction						
dP	0 X 2.31 = 0.00					
Pump Shut-off Head	GPM	FT HD	BHP			
		0				
Discharge						
Suction						
dP	0 X 2.31 = 0.00					
Final	GPM	FT HD	BHP			
		0	#DIV/0!			
Discharge						
Suction						
dP	0 X 2.31 = 0.00					
System Static Head	PSI					
Discharge Valve set @						
VFD set @						
System dP Set Point						

Pump No.					
Manufacturer					
Model/Size					
Impeller					
Service					
Motor MFG.					
Horsepower					
Frame					
RPM					
Voltage/Phase					
Service Factor					
Rated Amps					
Actual Amps					
Design GPM					
Pump GPM					
Design FT. HD					
Pump FT. HD					
Remarks					

[illegible]

[illegible]

[illegible]

Instrument Used: Panametric PT 878 Non-Invasive Ultrasonic Meter

[illegible]

HX #
Manufacturer
Model
Serial Number
Service

HX #
Manufacturer
Model
Serial Number
Service

Primary	DESIGN	ACTUAL
Ent./Lvg. Water Press		
Water Press. dP (psi)		
Ent./Lvg. Water Temp.		
Water Temp dT		
GPM		

Primary	DESIGN	ACTUAL
Ent./Lvg. Water Press		
Water Press. dP (psi)		
Ent./Lvg. Water Temp.		
Water Temp dT		
GPM		

Secondary	DESIGN	ACTUAL
Ent./Lvg. Water Press		
Water Press. dP (psi)		
Ent./Lvg. Water Temp.		
Water Temp dT		
GPM		

Secondary	DESIGN	ACTUAL
Ent./Lvg. Water Press		
Water Press. dP (psi)		
Ent./Lvg. Water Temp.		
Water Temp dT		
GPM		

Test Conditions:	ACTUAL
Outside Air Temp.	
Remarks:	

Test Conditions:	ACTUAL
Outside Air Temp.	
Remarks:	

Chiller #
Chiller Manufacturer
Model
Serial Number
Capacity

Chiller #
Chiller Manufacturer
Model
Serial Number
Capacity

EVAPORATOR	DESIGN	ACTUAL
Ent./Lvg. Water Press		
Evap. Water Press. dP (psi)		
Ent./Lvg. Water Temp.		
Water Temp dT		
GPM		

EVAPORATOR	DESIGN	ACTUAL
Ent./Lvg. Water Press		
Evap. Water Press. dP (psi)		
Ent./Lvg. Water Temp.		
Water Temp dT		
GPM		

CONDENSER	DESIGN	ACTUAL
Ent./Lvg. Water Press		
Cond. Water Press. dP (psi)		
Ent./Lvg. Water Temp.		
Water Temp dT		
GPM		

CONDENSER	DESIGN	ACTUAL
Ent./Lvg. Water Press		
Cond. Water Press. dP (psi)		
Ent./Lvg. Water Temp.		
Water Temp dT		
GPM		

Test Conditions:	ACTUAL
Outside Air Temp.	
Operating Load	
# of Chillers Running	
Remarks:	

Test Conditions:	ACTUAL
Outside Air Temp.	
Operating Load	
# of Chillers Running	
Remarks:	

CT #
Manufacturer
Model
Serial Number
Service

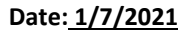
CT #
Manufacturer
Model
Serial Number
Service

	DESIGN	ACTUAL
GPM		
Ent./Lvg. Water Temp.		
Water Temp dT		

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GPM		
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Test Conditions:	ACTUAL
Outside Air Temp.	
Remarks:	

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Remarks:	

**Sheet: Terminal**[illegible]

Note: Use one of the above alternate methods

Outside Air Temperature °

Code	Remarks
AS Req't'd	Final airflow has been adjusted to suit requests of occupants
ABV CLG	Register (ETC) is located above ceiling line
BKN DPR	Volume Damper (VD), Face Damper (OPD), Splitter Damper (SD) is broken/stuck
CC	Ceiling conflict; kinked flex duct causing low flow
DD	Unit is direct drive; no adjustment can be made without a speed controller.
DD on HI	Direct drive fan set to High, medium (MED) or low (LO)
DT	Duct Traverse
DLF	DL Flow Tech Inc.
FACE	Velocity taken at the balance point
HDW MSG	Volume or splitter damper hardware is missing
Inline	Fan is an inline fan; Actual RPM can not be obtained
Long Flex	Flexible duct configuration and length is probable cause for low flow
Locked	No key available at time of balance
Max Flow	Maximum flow achievable
MAN OPN'D	Temporarily opened manually to set
New outlet	Outlet not shown on contract drawing; no CFM given; CFM assigned by DLF
Noisey	Register (ETC) has been set low to reduce objectionable air noise.
NPA	No provision to adjust; requires installation of volume damper / face damper
NI	Outlet not installed
NW	Device not working
TP	Test point location for duct traverse and/or static pressure
PT	Poor take-off / inlet flex to VAV box causing turbulence / probable cause for low flow
RAW	Raw opening -- Ductwork and collar is installed; register (etc.) is missing; tap is balanced high to compensate.
Set High	Set high due to missing register and/or to maintain total room flow (etc).
T'stat REV	The t'stat is reverse or opposite of design
T'stat LOC	T'stat not in area served
VD FO	Volume Dampers are in their maximum open position
VD FC	Volume Dampers are in their full closed position
VAV	Variable air volume box
CAV	Constant Volume Box
FPVAV	Fan powered variable air volume box
Register Types	
CD	Ceiling Diffuser
CR	Ceiling Register
EC	Egg Crate Type register
ER	Exhaust Register
FH	Fume Hood
LD	Linear Diffuser
LT	Light Troffer
WMS	Wire Mesh Screen
TR	Top Register
BR	Bottom Register
RAW	Raw opening
No CC	Flow metering device not installed, temp/pressure differential across elements used to determine flow.
Simulated flow	Where available pump or fan capacity is less than the total flow requirements, flow temporarily restricted to other parts.