AMERESCO

Airflow Testing Report

Prepared for

Portland Public Schools

August 2021

9700 SW Capitol Hwy, Suite 110
Portland, OR 97219
ameresco.com

PROJECT OVERVIEW

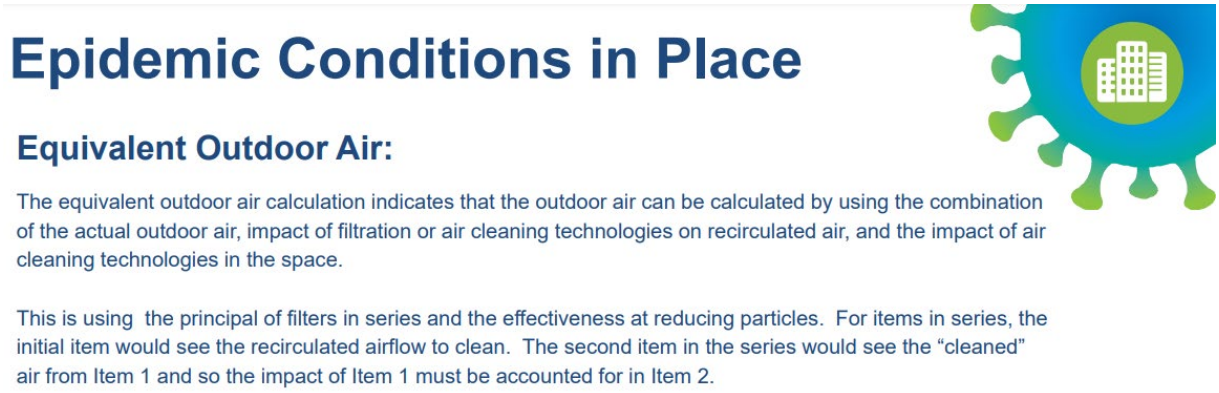
As part of the continuing process to ensure a safe return to in-person learning, Portland Public Schools has contracted with Ameresco to test the airflow and ventilation of all educational and office spaces in each school. The data is reviewed by both Ameresco and PPS personnel to identify any potential shortcomings in the airflow from the HVAC systems. To accomplish this task, Ameresco has partnered with a local NEBB certified Test-Adjust-Balance (TAB) firm, Neudorfer Engineers, who will measure the airflow to each zone with calibrated measurement equipment in accordance with current testing standards and procedures. As part of this effort, HVAC professionals will review the operation of the HVAC equipment serving every educational and office space in each school.

Ameresco is pleased to have partnered with PPS over the last decade as the district's Energy Services Company (ESCO) on six energy efficiency construction projects, four service projects, and numerous energy audits. Our partnership has resulted in reducing over 3,000 tons of CO_2 and other GHG emissions and over $1,000,000 in utility cost savings per year. Ameresco appreciates this opportunity to play a small role in the safe reopening of schools.

About Ameresco, Inc.
Founded in 2000, Ameresco, Inc. (NYSE:AMRC) is a leading cleantech integrator and renewable energy asset developer, owner and operator. Our comprehensive portfolio includes energy efficiency, infrastructure upgrades, asset sustainability and renewable energy solutions delivered to clients throughout North America and the United Kingdom. Ameresco's sustainability services in support of clients' pursuit of Net Zero include upgrades to a facility's energy infrastructure and the development, construction, and operation of distributed energy resources. Ameresco has successfully completed energy saving, environmentally responsible projects with Federal, state and local governments, healthcare and educational institutions, housing authorities, and commercial and industrial customers. With its corporate headquarters in Framingham, MA, Ameresco has more than 1,000 employees providing local expertise in the United States, Canada, and the United Kingdom. For more information, visit www.ameresco.com.

Explanation of ASHRAE Total Effective Air Changes per Hour (ACH_e) Calculation

ASHRAE has been updating their Building Readiness document to reflect the most current understanding in the engineering community for how to operate and maintain buildings during the pandemic. Their update on 4/27/2021 provided an explanation of the impact air filters and air cleaning devices have on the air in buildings. They provided the methodology, formulas, and an Excel-based tool for determining the equivalent outside air a space is receiving by having a mix of outside air, filtered recirculated air, and additional air filtration or cleaning devices in the room. Here is the explanation from ASHRAE:



As part of the airflow testing project that Portland Public Schools has partnered with Ameresco to complete, we are including the calculation of the Total Effective Air Changes per Hour (ACH_e) to show the impact of the air filtration that is active in nearly all spaces in the PPS schools. The formula for doing so is:

$$\mathrm{ACH_e} = \left(ACH_{oa} + ACH_f\right) * E_Z + ACH_ir$$

where:

- $\mathrm{ACH_{oa}}$ = air changes per hour of outside air = outside airflow in cubic feet per minute * 60 minutes per hour / room volume in cubic feet
- $\mathrm{ACH_f}$ = air changes per hour of clean air from filtered recirculated air with filters of the specified MERV rating as determined by ASHRAE
- E_z = Zone Air Distribution Effectiveness = how effective the HVAC system is at circulating and mixing the air to distribute the clean air throughout the room
- ACH_ir = the air changes per hour of clean air from portable air filters in the room = number of filters * CADR * 60 minutes per hour / room volume in cubic feet
    - CADR = Clear Air Delivery Rate = the CFM of clean air as specified by the manufacturer of the air filter

In order to include these calculations in the airflow testing reports, Ameresco and PPS have made the following assumptions as not all the variables are known:

1. PPS is in process of upgrading the air filters in their HVAC systems to MERV 13 and plans to be complete with that project for the start of the ’21-’22 school year. In this report and for the sake of the ACH_e calculation, we are using the filters that are in place at the time of the measurements, so some of them are still MERV 8.
2. ASHRAE has guidelines for what should be used for the Zone Air Distribution Effectiveness (E_z) based on the HVAC system configuration, but they do not provide a value for every HVAC system and room configuration. For the majority of PPS rooms, an E_z of 0.8 – 1.0 would be most appropriate, so we have made the conservative assumption of using 0.8 for every space as that yields the lower ACH_e.
3. The CADR for a given air filter is from manufacturer ratings and is based on certain conditions (fan speed, particulate size, filter cleanliness, etc.) that change with operating conditions.

NEUDORFER ENGINEERS INC.

TEST REPORT TYPE:
SURVEY REPORT

Portland Public Schools Airflow Testing
George MS
10000 N Burr Ave, Portland, OR 97203

Job Number: 2021-0297

Project Completion Date: **09/03/21**
Revision Date: **-** **Revision Number:** **-**





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Portland Public Schools Airflow Testing
George MS

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REPORT TITLE

CERTIFIED TEST: SURVEY REPORT

Project: Portland Public Schools Airflow Testing
George MS

NEI Job#: 2021-0297

Mechanical Engineer: NA

Architect: NA

HVAC Contractor: NA

TAB Firm: Neudorfer Engineers Inc
Test Engineer: Zach Mayer





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CERTIFICATION

Portland Public Schools Airflow Testing

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.

Significant / Noteworthy Remarks are noted on the General Remarks and General Field Notes pages. Other remarks are noted on individual test sheets.

Noted deficiencies are not the TAB firms responsibility to repair. Prior to issuance of this report, Deficiency Reports are forwarded to our contracted agent.

Warranty is limited to one year from date of this report. Within that time, any discrepancies, ambiguities, or omissions found in this report will be retested, adjusted, or balanced as needed. A written notification will be required.

Submitted and Certified by:

NEBB TAB Firm:	**Neudorfer Engineers Inc**
Certification No:	**3414**
Expiration Date:	**March 31, 2023**
Certification Date:	**March 31, 2021**
(Date completed)	*Signed and Sealed by:*
NEBB Supervisor:	**Mike Vawter P.E.**
NEBB Supervisor:	**Eric Stotts**





TERMS AND ABBREVIATIONS

Project: **Portland Public Schools Airflow Testing**

AC or ACU	Air Conditioner or Air Conditioning Unit
AH or AHU	Air Handler or Air Handling Unit
AVG	Average
BHP	Brake Horsepower
CAV	Constant Air Volume
CBV	Calbirated Balancing Valve (Circuit Setter)
CC	Cooling Coil
CD	Ceiling Diffuser
CFM	Cubic Feet per Minute
CH	Chiller
CHWS	Chilled Water Supply
CHWR	Chilled Water Return
CP	Circulating Pump
CR	Ceiling Register
CRAC	Computer Room Air Conditioner
CRU	Computer Room Unit
CT	Cooling Tower
CU	Condenser Unit
CUH	Cabinet Unit Heater
CWS	Condenser Water Supply
CWR	Condenser Water Return
DAT	Discharge Air Temperature
DB	Dyr Bulb
DD	Direct Drive
DDC	Direct Digital Controls: EMS Control System for the HVAC
Des.	Design
Dia.	Diameter
Disch.	Discharge
EA	Exhaust Air
EAT	Entering Air Temperature
Economizer	Controls and components that allow an air handler to logically utilize outdoor air for cooling as opposed to the use of mechanical cooling.
EF	Exhaust Fan
EG	Exhaust Grille
EMCS	Energy Management Control System
ERU	Energy Recovery Unit
E.S.P.	External Static Pressure
HRC	Heat Recovery Coil
EWT	Entering Water Temperature
FCU	Fan Coil Unit
FD	Fire Damper
FLA	Full Load Amperage: Maximum amperage a motor can draw.
Flow Hood	Instrument that captures air and converts the reading to CFM.
FHT	Fume Hood Test
FPB	Fan Powered Box
FPM	Feet per Minute
FR	Field Report
FT	Foot, Feet
FTU	Fan Terminal Unit
GPM	Gallons per Minute
HC	Heating Coil
TDH	Pressure Difference across the entering and leaving side of a pump.
HEPA	High Efficiency Particulate Arrestance
HP	Horsepower
HVAC	Heating Ventilation and Air Conditioning
HWS	Heating Water Supply
HWR	Heating Water Return
HX	Heat Exchanger
HZ	Hertz, cycle per second
in.	inches
in.w.g.	inches of water gauge
Kfactor	Correction factor to the free area need to calculate CFM.
KW	Kilowatts
LAT	Leaving Air Temperature
LWG	Low Wall Grille
LWR	Low Wall Register
LWT	Leaving Water Temperature
MAU	Make-up Air Hangling Unit
MBH	1,000 BTUH
N/A	Not Applicable
OSA	Outside Air
OBD	Opposed Blade Damper
∆P	Pressure Drop.
PH	Phase
PSI	Pounds per Square Inch
RA	Return Air
RAD	Radiator
RAT	Return Air Temperature
RF	Return Fan
RH	Relative Humidity
RHC	Reheat Coil
RPM	Revolutions per Minute
RTU	Roof Top Unit
SA	Supply Air
SAT	Supply Air Temerature
S.F.	Service Factor
SF	Supply Fan
SFD	Smoke/Fire Damper
SP	Static Pressure
sq.ft.	square feet
Suct.	Suction
SWG	Sidewall Grille
SWR	Sidewall Register
TAB	Test; Adjust; and Balance
TSP	Total Static Pressure: Difference between the entering and leaving static pressure of a fan.
UH	Unit Heater
VAV	Variable Air Volume; box that contains a motorized damper that modulates airflow.
VD	Volume Damper
VFD	Variable Frequency Drive
Velgrid	Instrument that reads used to read velocity in feet per minute.
VVT	Variable Volume Terminal
WC	Water Column
W.G.	Water Gauge
WB	Wet Bulb

INSTRUMENT CALIBRATIONS

Portland Public Schools Airflow Testing

Instrument Type	Air Data Meter with Flowhood	Instrument Serial #	**M00475**
Instrument Manufacturer	**Shortridge**	Calibration Date	**11/4/2020**
Instrument Model Number	**ADM 870**	Calibration Due	**11/4/2021**

Instrument Type	Differential Pressure Water Meter	Instrument Serial #	**W14090**
Instrument Manufacturer	**Shortridge**	Calibration Date	**10/16/2020**
Instrument Model Number	**HDM-250**	Calibration Due	**10/16/2021**

Instrument Type	Psychrometer	Instrument Serial #	**8084305**
Instrument Manufacturer	**Extech**	Calibration Date	**10/13/2020**
Instrument Model Number	**RH390**	Calibration Due	**10/13/2021**

Instrument Type	Tachometer	Instrument Serial #	**B185B5022P**
Instrument Manufacturer	**Nidec**	Calibration Date	**10/11/2020**
Instrument Model Number	**MT-200**	Calibration Due	**10/11/2021**

Instrument Type	Amp Probe	Instrument Serial #	**33380179WS**
Instrument Manufacturer	**Fluke**	Calibration Date	**10/9/2020**
Instrument Model Number	**323 Clamp Meter**	Calibration Due	**10/9/2021**

Instrument Type	Digital Thermometer	Instrument Serial #	**45400509WS**
Instrument Manufacturer	**Fluke**	Calibration Date	**10/9/2020**
Instrument Model Number	**52 II**	Calibration Due	**10/9/2021**

Instrument Type	Manometer	Instrument Serial #	**M00475**
Instrument Manufacturer	**Shortridge**	Calibration Date	**11/4/2020**
Instrument Model Number	**ADM 870**	Calibration Due	**11/4/2021**

Instrument Type	Thermal Anemometer	Instrument Serial #	**AVM440742003**
Instrument Manufacturer	**Alnor Instruments**	Calibration Date	**11/9/2020**
Instrument Model Number	**AVM 440**	Calibration Due	**11/9/2021**

Instrument Type	Ultrasonic Flow Meter	Instrument Serial #	**N5K1435T**
Instrument Manufacturer	**Fuji**	Calibration Date	**10/14/2020**
Instrument Model Number	**Portaflow-C**	Calibration Due	**10/14/2021**

PROJECT Portland Public Schools Airflow Testing
LOCATION George MS; 10000 N Burr Ave, Portland, OR 97203

REPORT SUMMARY

This project has been surveyed per plans and specifications using the National Environmental Balancing Bureau (NEBB) standards and procedures.

The scope of work for this project was to assess the current airflows for each classroom, office, and special purpose space. Air changes per hour were calculated along with the % of OSA for the spaces and any deficiencies found for each piece of equipment has been noted in the following report.

All ventilation equipment was commanded to run by the BMS system. Ventilation units were measured with a flowhood on the supply outlets. Outside air was recorded with a flowhood on the OSA louvre where accessible. AK factors were calculated from flowhood readings. The remaining OSA values were recorded with a velgrid. AHU supply air was recorded by a summation of the outlets as recorded by flowhood or velgrid when appropriate. Outside air was recorded with a velgrid or airfoil and calculated by the free area method.

The measured airflows in this report represent the performance of the equipment at the time of measurement, which vary over time based on operating conditions. There are factors outside the control of Neudorfer that impact airflow, and variance in those factors is expected and normal. One significant factor is the MERV rating and condition of the air filters on the equipment. During the summer of 2021, PPS began upgrading the filters on all their fan systems to MERV 13. Those upgraded filters are more effective at capturing particles but also impact the amount of airflow from the equipment. These filter changes were occurring while the airflow measurement project was happening, so some schools had the new filters, and some had the old filters at the time of measurement. On the data page included this report, there is a line stating whether or not the upgraded filters were in place at the time of measurement.

AIRFLOW SURVEY REPORT

Project: Portland Public Schools Airflow Testing
Location: George MS; 10000 N Burr Ave, Portland, OR 97203
Filter Status: Upgraded

Room	Equipment Info		Room Dimensions					Airflow Measurements			Calculated ACH					Notes
	Served By	Equipment Type	Room Length	Room Width	Room Area	Room Height	Room Volume	Total CFM Supply	OA CFM Supply	OA %	Air Changes per Hour (supply)	Air Changes per Hour (OA)	# of Portable Filters	Total Effective Air Changes per Hour (ACH_e) with Portable Filter	Total Effective Air Changes per Hour (ACH_e) without Portable Filter	
First Floor																
Main Offie 100	AH-3	AHU	30.6	31.2	955	14.5	13,843	660	389	59%	2.9	1.7	1	3.3	2.2	
100A	AH-3	AHU	12.6	14.5	183	9.0	1,644	140	83	59%	5.1	3.0	1	13.4	3.9	
100B	AH-3	AHU	14.4	17.4	251	8.9	2,230	220	130	59%	5.9	3.5	1	11.5	4.5	
Conf. Rm 100C	AH-3	AHU	9.9	14.4	143	9.0	1,283	220	130	59%	10.3	6.1	1	20.0	7.9	
100D	AH-3	AHU	9.6	5.9	57	8.0	453	105	62	59%	13.9	8.2	1	45.1	10.7	
101	AHU-1	AHU	9.5	10.6	101	9.0	906	130	130	100%	8.6	8.6	1	24.1	6.9	
Conf. Rm 101A	AHU-1	AHU	11.5	19.0	219	9.8	2,141	270	270	100%	7.6	7.6	1	13.3	6.1	
Conf. Rm 101B	AHU-1	AHU	15.6	19.0	296	9.8	2,905	325	325	100%	6.7	6.7	1	10.7	5.4	
Conf. Rm 101C	AHU-1	AHU	10.5	10.6	111	9.0	1,002	140	140	100%	8.4	8.4	1	22.3	6.7	
Rm 103	AHU-1	AHU	30.7	31.5	967	9.8	9,477	1,060	1,060	100%	6.7	6.7	1	7.0	5.4	
Rm 105	AH-4	AHU	31.6	47.8	1,510	11.8	17,824	1,200	660	55%	4.0	2.2	1	4.0	3.1	
105A	AH-4	AHU	12.2	15.4	188	9.6	1,804	50	28	55%	1.7	0.9	1	9.9	1.3	
Rm 106	AHU-1	AHU	20.5	30.0	615	11.9	7,319	50	50	100%	0.4	0.4	1	2.5	0.3	
Rm 107	AHU-1	AHU	29.9	31.5	942	12.0	11,302	1,020	1,020	100%	5.4	5.4	1	5.7	4.3	
Rm 108	AHU-1	AHU	29.7	31.5	936	12.0	11,227	710	710	100%	3.8	3.8	1	4.4	3.0	
Rm 112	AHU-1	AHU	29.9	31.6	945	11.9	11,244	700	700	100%	3.7	3.7	1	4.4	3.0	
Rm 113	AHU-1	AHU	29.8	31.5	939	12.0	11,264	950	950	100%	5.1	5.1	1	5.4	4.0	
Rm 114	AHU-1	AHU	29.2	31.5	920	11.9	10,946	860	860	100%	4.7	4.7	1	5.2	3.8	
Rm 115	AH-1	AHU	28.8	29.8	858	12.8	10,985	700	105	15%	3.8	0.6	1	4.2	2.8	
Rm 116	AHU-1	AHU	28.7	30.0	861	12.4	10,676	970	970	100%	5.5	5.5	1	5.8	4.4	
117	AHU-1	AHU	19.7	15.1	297	12.0	4,149	550	550	100%	8.0	8.0	1	10.1	6.4	Non-rectangular room.
Rm 119	AH-1	AHU	29.8	29.6	882	12.8	11,291	540	81	15%	2.9	0.4	1	3.5	2.1	
Rm 120	AH-1	AHU	28.9	29.9	864	12.8	11,061	890	134	15%	4.8	0.7	1	4.9	3.5	
Rm 128	AH-1	AHU	29.4	38.6	1,135	12.9	14,639	810	122	15%	3.3	0.5	1	3.5	2.4	

Date: 8/16/2021 Readings By: Mayer

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www.NeudorferEngineers.com

AIRFLOW SURVEY REPORT

Project: Portland Public Schools Airflow Testing
Location: George MS; 10000 N Burr Ave, Portland, OR 97203
Filter Status: Upgraded

Room	Equipment Info		Room Dimensions					Airflow Measurements			Calculated ACH					Notes
	Served By	Equipment Type	Room Length	Room Width	Room Area	Room Height	Room Volume	Total CFM Supply	OA CFM Supply	OA %	Air Changes per Hour (supply)	Air Changes per Hour (OA)	# of Portable Filters	Total Effective Air Changes per Hour (ACH_e) with Portable Filter	Total Effective Air Changes per Hour (ACH_e) without Portable Filter	
First Floor																
Rm 126	AH-1	AHU	29.3	29.9	876	12.3	10,776	435	65	15%	2.4	0.4	1	3.2	1.8	
Rm 130	AH-1	AHU	29.4	38.7	1,138	12.8	14,564	940	141	15%	3.9	0.6	1	3.9	2.8	
Rm 131	AH-1	AHU	28.3	32.7	925	12.0	11,105	1,175	176	15%	6.3	1.0	1	6.0	4.6	
Rm 132	AH-1	AHU	29.0	31.5	914	12.0	10,962	700	105	15%	3.8	0.6	1	4.2	2.8	
Rm 133	AH-1	AHU	28.3	32.7	925	12.0	11,105	740	111	15%	4.0	0.6	1	4.3	2.9	
Rm 134	AH-1	AHU	29.0	31.5	914	12.0	10,962	865	130	15%	4.7	0.7	1	4.9	3.5	
Rm 135	AH-1	AHU	28.0	41.1	1,151	11.2	12,889	850	128	15%	4.0	0.6	1	4.1	2.9	
Rm 136	AH-1	AHU	29.0	31.5	914	12.0	10,962	820	123	15%	4.5	0.7	1	4.7	3.3	
Rm 137	AH-1	AHU	24.4	27.7	676	12.0	8,111	945	142	15%	7.0	1.0	1	7.0	5.1	
Rm 138	AH-1	AHU	22.2	29.0	644	12.0	7,726	138	21	15%	1.1	0.2	1	2.8	0.8	
Rm 140	AH-1	AHU	28.8	31.5	907	12.0	10,886	1,140	171	15%	6.3	0.9	1	6.0	4.6	
Rm 142	AH-1	AHU	29.0	31.5	914	12.0	10,962	910	137	15%	5.0	0.7	1	5.1	3.6	
144A	-	-	13.7	10.3	141	9.0	1,270	-	-	-	0.0	0.0	1	12.3	0.0	Ventilation provided by adjacent spaces.
Rm 144	AH-2 + AHU-1	AHU + AHU	51.6	30.0	1,548	11.6	17,957	2,120	1,875	88%	7.1	6.3	1	6.5	5.6	
123D			-	-	-	-	-	-	-	-	0.0	0.0	0	N/A	0.0	Room locked. Custodian does not have key.
127B	-	-	10.5	6.5	68	7.9	539	-	-	-	0.0	0.0	1	28.9	0.0	Ventilation provided by adjacent spaces.
149A	AHU-5	AHU	10.1	8.1	82	8.6	704	120	120	25%	10.2	10.2	1	30.4	8.2	100% OSA. Not ducted for return.
149B	AHU-5	AHU	20.5	17.2	353	8.6	3,032	75	75	25%	1.5	1.5	1	6.3	1.2	100% OSA. Not ducted for return.
149B-2	-	-	17.9	10.9	195	8.6	1,678	-	-	-	0.0	0.0	1	9.3	0.0	Ventilation provided by adjacent spaces.
148C-2	-	-	18.0	10.9	196	8.5	1,668	-	-	-	0.0	0.0	1	9.4	0.0	Ventilation provided by adjacent spaces.
149C	AHU-5	AHU	20.5	17.9	367	8.6	3,156	215	215	25%	4.1	4.1	1	8.2	3.3	100% OSA. Not ducted for return.
149D	-	-	11.8	8.0	94	8.6	812	-	-	-	0.0	0.0	1	19.2	0.0	Ventilation provided by adjacent spaces.
134C	-	-	8.0	4.0	32	8.6	275	-	-	-	0.0	0.0	1	56.7	0.0	Ventilation provided by adjacent spaces.
Gym 149	AHU-4	AHU	90.2	55.9	5,042	21.7	109,415	3,555	105	3%	1.9	0.1	1	1.5	1.4	

Date: 8/16/2021 Readings By: Mayer

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AIRFLOW SURVEY REPORT

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Filter Status: Upgraded

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First Floor																
145	AH-5	AHU	29.7	30.0	891	9.8	8,732	830	116	14%	5.7	0.8	1	6.0	4.2	
143	AH-5	AHU	32.6	23.4	763	12.7	9,512	535	75	14%	3.4	0.5	1	4.1	2.5	
143B	-	-	6.1	3.4	21	10.9	226	-	-	-	0.0	0.0	1	69.0	0.0	Ventilation provided by adjacent space.
143C	-	-	15.6	8.9	139	11.0	1,527	-	-	-	0.0	0.0	1	10.2	0.0	Ventilation provided by adjacent space.
Cafeteria 151	AHU-2	AHU	40.5	70.9	2,871	14.3	41,062	3,600	3,365	93%	5.3	4.9	1	4.6	4.2	
157	AHU-3	AHU	10.7	14.7	157	9.0	1,416	350	109	31%	14.8	4.6	1	22.1	11.0	
157B	AHU-3	AHU	9.1	9.0	82	9.0	737	120	37	31%	9.8	3.0	1	28.4	7.3	
157C	AHU-3	AHU	7.0	11.6	81	8.9	723	70	22	31%	5.8	1.8	1	25.9	4.3	
Auditorium 163	AHU-3	AHU	53.6	57.7	3,093	17.8	55,050	6,385	1,979	31%	5.4	1.7	1	4.3	4.0	
Stage 163A	-	-	17.7	41.6	736	20.9	15,389	-	-	-						Open and shared with Auditorium.
156A	AH-3	AHU	11.4	18.6	212	8.0	1,696	175	103	59%	6.2	3.7	1	13.9	4.7	
156B	AH-3	AHU	11.9	8.0	95	8.0	762	85	50	59%	6.7	4.0	1	25.6	5.1	
Library 156	AH-3	AHU	37.8	60.0	2,268	15.3	34,700	2,525	1,490	59%	4.4	2.6	1	3.8	3.3	
Conf. Rm 156C	AH-3	AHU	11.6	11.8	137	9.0	1,232	95	56	59%	4.6	2.7	1	16.2	3.5	
160	AH-3	AHU	21.8	22.2	484	11.7	5,662	650	384	59%	6.9	4.1	1	8.0	5.3	
Rm 161	AHU-1	AHU	25.2	29.0	731	12.0	8,770	490	490	100%	3.4	3.4	1	4.5	2.7	
Rm 162	AHU-1	AHU	22.2	29.0	644	12.0	7,726	1,370	1,370	100%	10.6	10.6	1	10.5	8.5	
Rm 125	AHU-1	AHU	29.0	31.5	914	12.0	10,962	1,180	1,180	100%	6.5	6.5	1	6.6	5.2	
Rm 124	AHU-1	AHU	29.9	31.5	942	12.0	11,302	1,285	1,285	100%	6.8	6.8	1	6.8	5.5	
Rm 123	AHU-1	AHU	29.8	31.5	939	12.0	11,264	1,095	1,095	100%	5.8	5.8	1	6.1	4.7	
128A	AH-1	AHU	12.3	26.3	323	10.0	3,235	245	37	15%	4.5	0.7	1	8.1	3.3	

Date: 8/16/2021 Readings By: Mayer

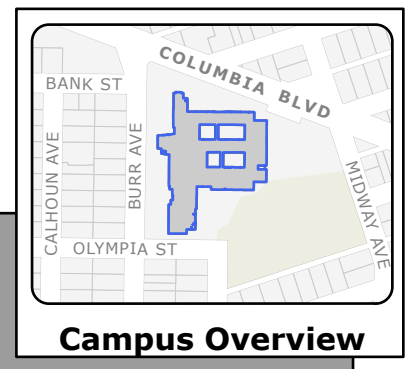
Project: Portland Public Schools Airflow Testing
Location: George MS; 10000 N Burr Ave, Portland, OR 97203

NOTE #	NOTE DESCRIPTION

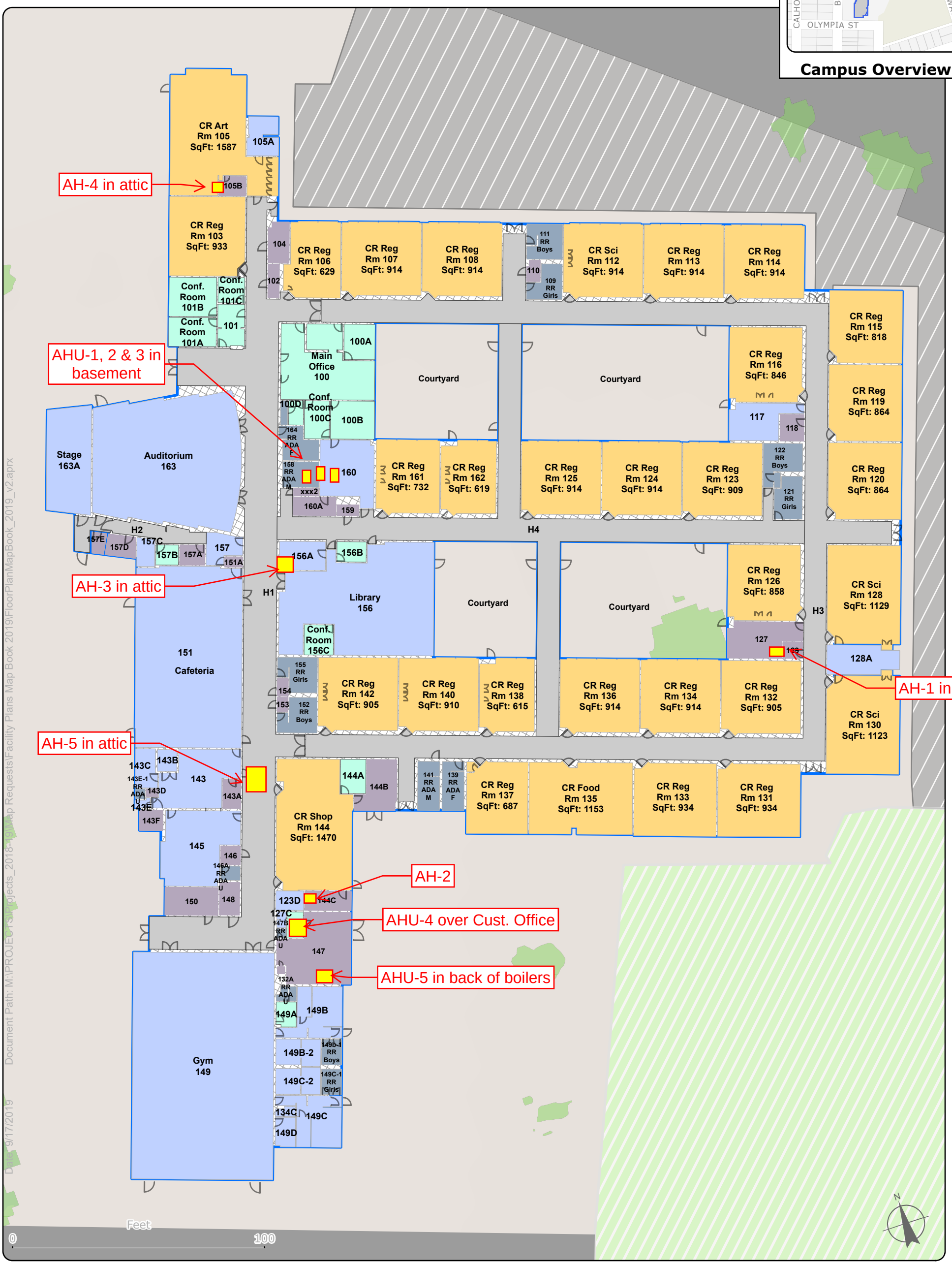
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GEORGE: First Floor



Campus Overview



Document Path: M:\PROJECTS\Projects_2018-19\Map Requests\Facility Plans Map Book 2019\FloorPlanMapBook_2019_v2.aprx

Date: 9/17/2019

Space Use

- Classroom
- Office
- Rest Room
- Special Purpose
- Corridor
- Other
- Stairs/Elevator

School Grounds

- Campus Footprints
- Athletic Field
- Playground: Paved
- Playground: Unpaved
- Streets
- Doors

Total Number Of Rooms By Classification

Classrooms: 31	Special Purpose: 25
Office Spaces: 15	Storage: 20