

LONGVIEW SCHOOL DISTRICT INDOOR AIR QUALITY IMPROVEMENTS - AIR BALANCING

2715 LILAC STREET
LONGVIEW, WA 98632

LONGVIEW SCHOOL DISTRICT

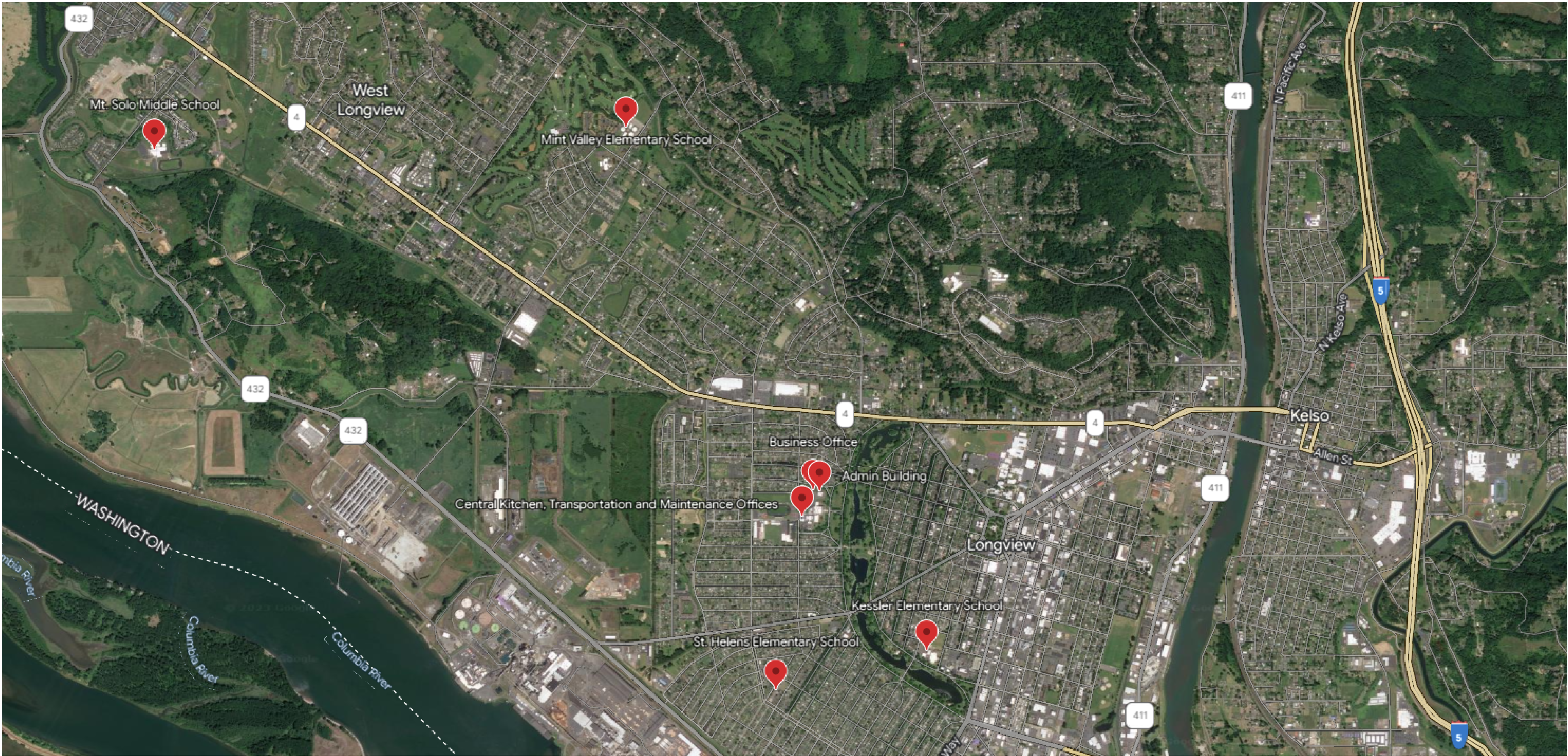
BID SET

INTEGRUS PROJECT NO. 22220.00



SHEET INDEX

MECHANICAL	
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M1.6	BUSINESS OFFICE
M1.7	ADMINISTRATIVE BUILDING



PROJECT TEAM

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MECHANICAL

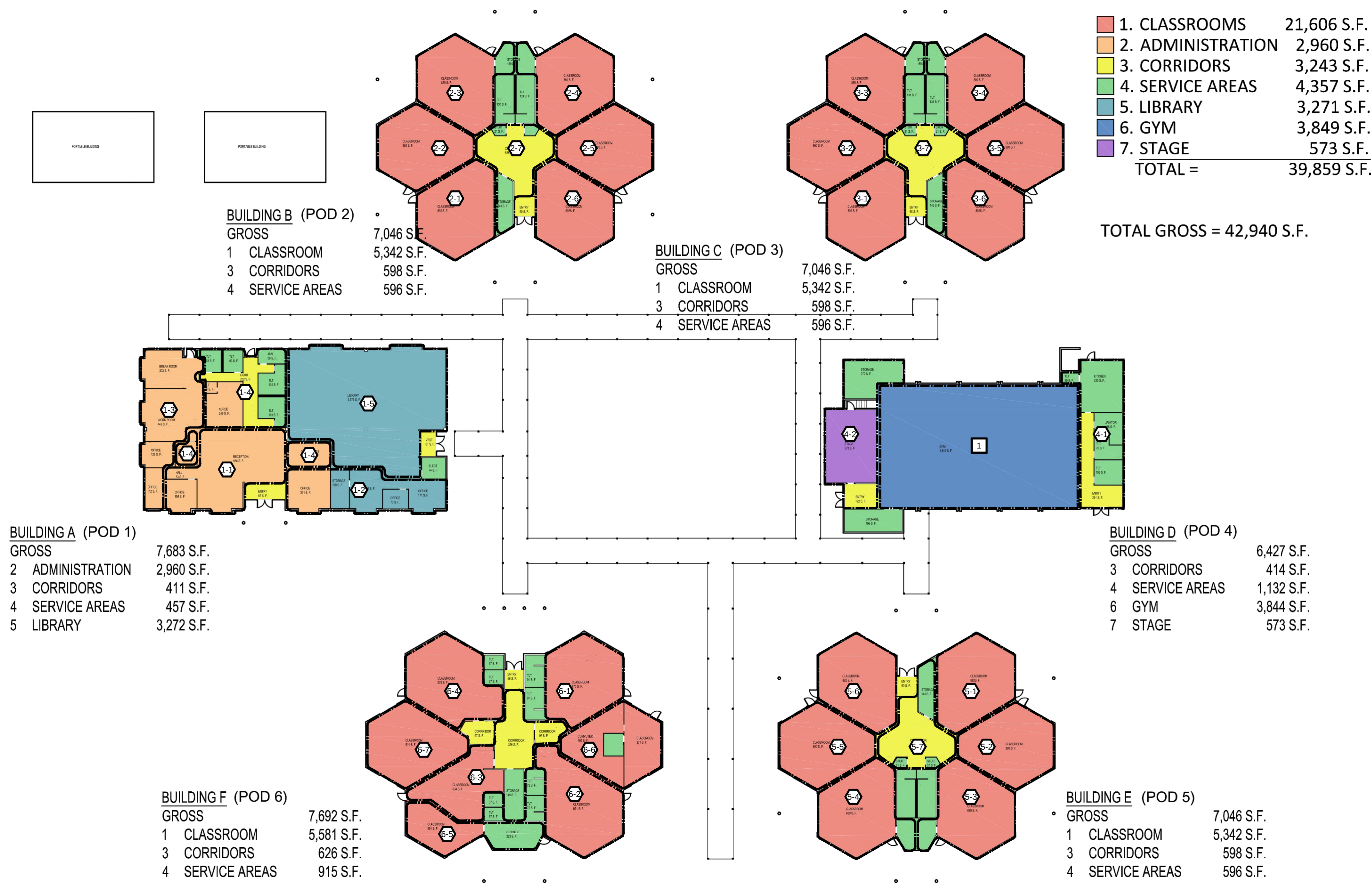
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06/02/23

SET NO. _____



OA VENTILATION CALCULATION
PER IMC 2018

Project: MINT VALLEY ES
No: 22-220

HVAC Unit	Room Name	Outdoor Airflow
GFU-1-1	MAIN OFFICES	250
GFU-1-2	LIBRARY OFFICES	100
GFU-1-3	TEACHERS AREA	175
GFU-1-4	HEALTH	75
GFU-1-5	LIBRARY	455
GFU-2-1	CLASSROOM	330
GFU-2-2	CLASSROOM	420
GFU-2-3	CLASSROOM	420
GFU-2-4	CLASSROOM	420
GFU-2-5	CLASSROOM	430
GFU-2-6	CLASSROOM	420
GFU-2-7	CORRIDOR	40
GFU-3-1	CLASSROOM	330
GFU-3-2	CLASSROOM	420
GFU-3-3	CLASSROOM	420
GFU-3-4	CLASSROOM	420
GFU-3-5	CLASSROOM	430
GFU-3-6	CLASSROOM	420
GFU-3-7	CORRIDOR	40
GFU-4-1	CORRIDOR	30
GFU-4-2	STAGE	275
F-1	GYM	1,200
GFU-5-1	CLASSROOM	330
GFU-5-2	CLASSROOM	420
GFU-5-3	CLASSROOM	420
GFU-5-4	CLASSROOM	420
GFU-5-5	CLASSROOM	430
GFU-5-6	CLASSROOM	420
GFU-5-7	CORRIDOR	40
GFU-6-1	CLASSROOM	330
GFU-6-2	CLASSROOM	460
GFU-6-3	CLASSROOM	475
GFU-6-4	CLASSROOM	460
GFU-6-5	CLASSROOM	375
GFU-6-6	CLASSROOM	390
GFU-6-7	CLASSROOM	430

BALANCING NOTES

- CONTRACTOR SHALL BALANCE ALL HVAC SYSTEMS TO PROVIDE THE MINIMUM OUTDOOR AIR CFM AS SCHEDULED.
- FOR UNITS THAT SERVE MULTIPLE ZONES, CONTRACTOR SHALL MEASURE EXISTING SUPPLY AIR FLOW TO EACH SPACE AND THE TOTAL AIRFLOW OF THAT HVAC UNIT. SUBMIT MEASUREMENTS TO MECHANICAL ENGINEER WHO WILL USE INFORMATION TO PROVIDE FOR OUTSIDE AIR CALCULATIONS FOR THAT UNIT.
- WHERE EXISTING HVAC SYSTEM IS PROVIDED WITH CO2 CONTROLS, THE SCHEDULED MINIMUM OUTDOOR AIR CFM MAY BE REDUCED TO 50% OF THE CALCULATED VALUE.
- LIMITED MECHANICAL AS BUILTS ARE AVAILABLE FOR USE BY CONTRACTOR. CONTACT OWNER.

KEYED NOTES

- ROOFTOP GAS PACK (GFU-#-#) WITH ELECTRIC COOLING.
- ROOFTOP GAS FURNACE.

FLOOR PLAN - VENTILATION 1
NTS M1.1

LONGVIEW SCHOOL DISTRICT
INDOOR AIR QUALITY IMPROVEMENTS
AIR BALANCING
2715 LILAC STREET
LONGVIEW, WA 98632

Date:	6/1/2023	
Job No.:	22220.00	
Drawn By:	NG	
Checked by:	NRH	
Revisions		
#	Date	Description

VENTILATION
CALCULATIONS -
MINT VALLEY

M1.1

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SIGNED
6/2/2023



FLOOR PLAN - VENTILATION
NTS

1
M1.2

MT SOLO MIDDLE SCHOOL

OA VENTILATION CALCULATION
PER IMC 2018

Project: Mt. Solo ES
No: 22-220

Single Zones	Zone #	Room Name	Outdoor Airflow
FC-1	1	LARGE GROUP - CORRIDOR	115
FC-2	2	7TH GRADE	400
FC-3	3	6TH GRADE	400
FC-4	4	6TH GRADE	400
FC-5	5	6TH GRADE	400
FC-6	6	6TH GRADE	400
FC-7	7	6TH GRADE	400
FC-8	8	6TH GRADE	450
FC-9	9	CORRIDOR	100
FC-16	16	TEACHER LUNCHROOM	85
FC-18	18	CORRIDOR	200
FC-19	19	LARGE GROUP - CORRIDOR	115
FC-20	20	7TH GRADE	400
FC-21	21	RESOURCE	400
FC-22	22	7TH GRADE	400
FC-23	23	7TH GRADE	400
FC-24	24	7TH GRADE	400
FC-25	25	7TH GRADE	400
FC-27	27	TECH CLASSROOM	450
FC-28	28	SCIENCE	450
FC-29	29	SCIENCE	460
FC-30	30	SCIENCE (STEM)	310
FC-31	31	LIFE SKILLS	440
FC-32	32	COMPUTER	320
FC-33	33	ART	320
FC-36	36	LARGE GROUP - CORRIDOR	115
FC-37	37	8TH GRADE	400
FC-38	38	8TH GRADE	400
FC-39	39	8TH GRADE	400
FC-40	40	8TH GRADE	400
FC-41	41	8TH GRADE	400
FC-42	42	8TH GRADE	400
FC-43	43	CORRIDOR	60
FC-44	44	CORRIDOR	100
FC-45	45	VOCAL	350
FC-46	46	INSTRUMENTAL	615
FC-50	50	WEIGHT ROOM	700
A-1	A1	CAFETERIA	3,000
A-2	A2	GYM	6,500

OA VENTILATION CALCULATION
PER IMC 2018 (Ev Simplified Procedure)

Project: Mt. Solo MS
No: 22-220

Multi-Zone Unit	Zone Number	Room Name	Supply Air	AHU Total OA
FC-10	10.1	Teacher Prep	265	80
	10.2	Small Group	225	
FC-12	12.1	Conference Room	265	130
	12.2	Principal	240	
	12.3	Asst Principal	240	
	12.4	ISS	215	
FC-13	13.1	Hall	100	306
	13.2	Hall	200	
	13.3	Reception	600	
	13.4	Reception	330	
	13.5	Examp Room	300	
	13.6	Workroom	420	
	13.7	Nurse	110	
FC-14	14.1	Library	2400	975
	14.2	Office	145	
	14.3	Work RM	145	
FC-15	15.1	Special Education	610	350
	15.2	Office	130	
	15.3	Conf.	130	
	15.4	Special Education	505	
	15.5	Office	170	
FC-17A	17.1	Kitchen	1920	350
	17.2	Kit. Office	215	
	17.3	La Carte	100	
	17.4	Kit Storage	100	
	17.5	Storage	300	
FC-26	26.1	Teacher Prep	265	80
	26.2	Small Group	225	
FC-34	34.1	Teacher Prep	265	80
	34.2	Small Group	225	
FC-35	35.1	Corridor	1000	160
	35.2	Storage	360	
	35.3	Hall	200	
FC-47	47.1	Practice	100	90
	47.2	Office	220	
	47.3	Practice	160	
FC-48	48.1	Athletics Storage	160	1460
	48.2	Girls Locker Room	1380	
	48.3	Office	165	
	48.4	Toilet	60	
	48.5	Toilet	205	
	48.6	Storage	110	
FC-49	49.1	Athletics Storage	160	1460
	49.2	Boys Locker Room	1380	
	49.3	Office	165	
	49.4	Toilet	60	
	49.5	Toilet	205	
	49.6	Storage	110	

BALANCING NOTES

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KEYED NOTES

1 FAN COIL UNIT

LONGVIEW SCHOOL DISTRICT
INDOOR AIR QUALITY IMPROVEMENTS
AIR BALANCING
2715 LILAC STREET
LONGVIEW, WA 98032

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VENTILATION
CALCULATIONS -
MT. SOLO MS

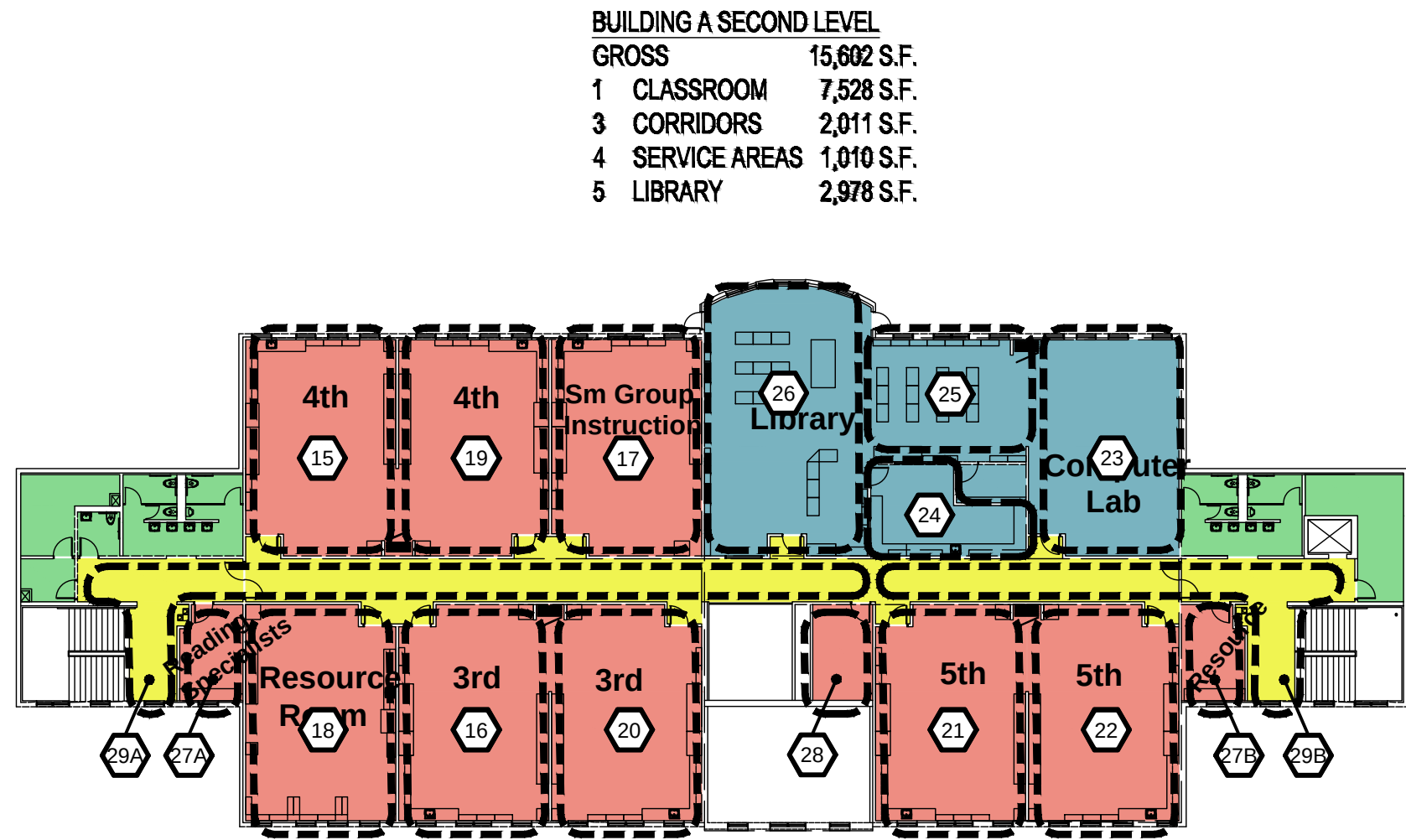
M1.2



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SECOND LEVEL



SECOND LEVEL - VENTILATION

NTS

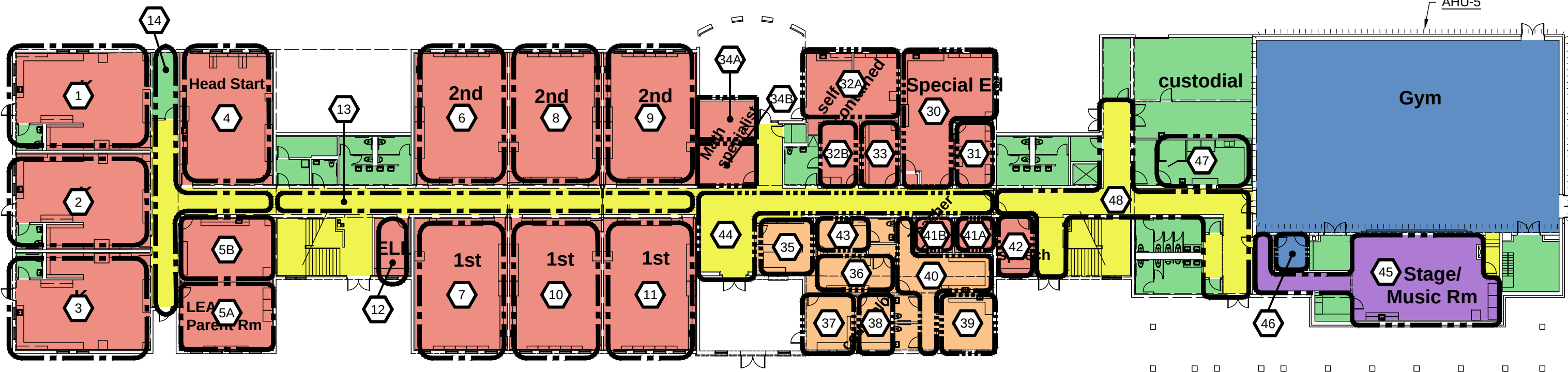
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M1.3

- | | |
|-------------------|-------------|
| 1. CLASSROOMS | 19,753 S.F. |
| 2. ADMINISTRATION | 1,677 S.F. |
| 3. CORRIDORS | 6,068 S.F. |
| 4. SERVICE AREAS | 4,323 S.F. |
| 5. LIBRARY | 2,978 S.F. |
| 6. GYM | 4,255 S.F. |
| 7. MUSIC | 1,040 S.F. |
| TOTAL = | 40,094 S.F. |

TOTAL GROSS = 45,274 S.F.

MAIN LEVEL



MAIN LEVEL - VENTILATION

NTS

1

M1.3

ST. HELENS ELEMENTARY SCHOOL

ST. HELENS ELEMENTARY SCHOOL

OA VENTILATION CALCULATION

PER IMC 2018 (Ev Simplified Procedure Per State Amendment)

Project: ST. HELENS ELEMENTARY
No: 22-220

OUTSIDE AIR:

HVAC Unit	Zone #	Name	Max VAV Supply Air	Min	AHU Total OA
AHU-1	1	A101 Corridor	540	270	5800
	2	A101 Corridor	700	350	
	3	A102 Classroom	1650	550	
	4	A103 Classroom	1650	550	
	5	A104 Classroom	1650	550	
	6	A105 Classroom	1650	550	
	7	A106 Classroom	1650	550	
	8	A107 Classroom	1650	550	
	9	A108 ELL	330	110	
	10	A114 Leap Parent Room	1000	350	
	11	A114 Leap Parent Room	650	250	
	12	A115 Headstart	1650	550	
	13	A117 Kindergarten	1650	550	
	14	A119 Kindergarten	1650	550	
	15	A121 Kindergarten	1650	550	
AHU-2	1	A208 Office	330	110	5800
	2	A207 Classroom	1650	550	
	3	B207 Classroom	1200	750	
	3	A205 Classroom	1650	550	
	4	A203 Classroom	1650	550	
	5	A206 Classroom	1650	550	
	6	A204 Classroom	1650	550	
	7	A202 Classroom	1650	550	
	8	B202 Library	1050	350	
	9	B202 Library	1800	630	
	10	B204 Workroom	280	170	
	11	B209 Computer Lab	2250	750	
	12	B206 Classroom	1650	550	
	13	B208 Classroom	1650	550	
	14	B205 Office	330	110	
	16	B209 Corridor	600	350	
	17	B214 Office	300	100	
AHU-3	1	B103 Reception	210	130	2000
	2	B104 Health	150	60	
	3	B108 Principal	390	130	
	4	B107 Secretary	150	130	
	1	B109 Conference	390	150	
	6	B112 Breakroom	450	150	
	7	B113 Workarea	260	240	
	8	B114 Office	150	60	
	9	B115 Office	150	60	
	10	B116 Corridor	400	200	
	11	B117 Math Specialist	210	80	
	12	B118 Math Specialist	315	190	
	13	B120A Self Contained	900	420	
	14	B120B Self Contained	300	100	
	14	B121 Office	90	65	
	15	B122 Special Ed	1430	420	
	16	B123 Office	90	65	
	17	B127 Speech	330	110	
AHU-4	1	B134 Kitchen	600	320	1500
	2	B137 Stage/Music Room	1280	530	
	3	B139 PE Office	90	50	
	4	B143 Corridor	1380	850	
AHU-5	1	B142 Gym			2600

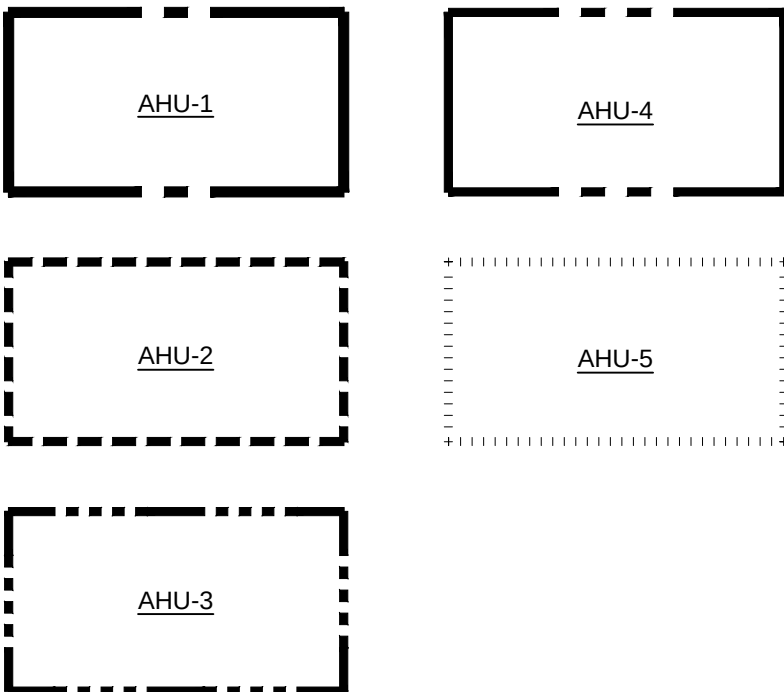
BALANCING NOTES

- CONTRACTOR SHALL BALANCE ALL HVAC SYSTEMS TO PROVIDE THE MINIMUM OUTDOOR AIR CFM AS SCHEDULED.
- WHERE EXISTING HVAC SYSTEM IS PROVIDED WITH CO2 CONTROLS, THE SCHEDULED MINIMUM OUTDOOR AIR CFM MAY BE REDUCED TO 50% OF THE CALCULATED VALUE.
- EXISTING HVAC SYSTEM CONSISTS OF CENTRAL AIR HANDLERS SUPPLYING AIR TO TERMINAL VAV BOXES, AND "HV" UNITS SERVING BOTH SINGLE AND MULTI ROOM ZONES.
- AS-BUILTS ARE AVAILABLE FOR USE BY CONTRACTOR, CONTACT ENGINEER.

KEYED NOTES

1 VAV - #

KEY PLAN

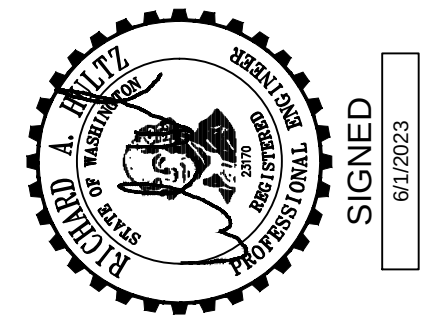


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INDOOR AIR QUALITY IMPROVEMENTS
AIR BALANCING
2715 LILAC STREET
LONGVIEW, WA 98032

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VENTILATION
CALCULATIONS -
ST. HELENS ES

M1.3



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2715 LILAC STREET
ONCAYE, VA 22059

Date:	6/1/2023	
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Revisions		
#	Date	Description

VENTILATION
CALCULATIONS -
KESSLER ES

M1.4



FLOOR PLAN - VENTILATION

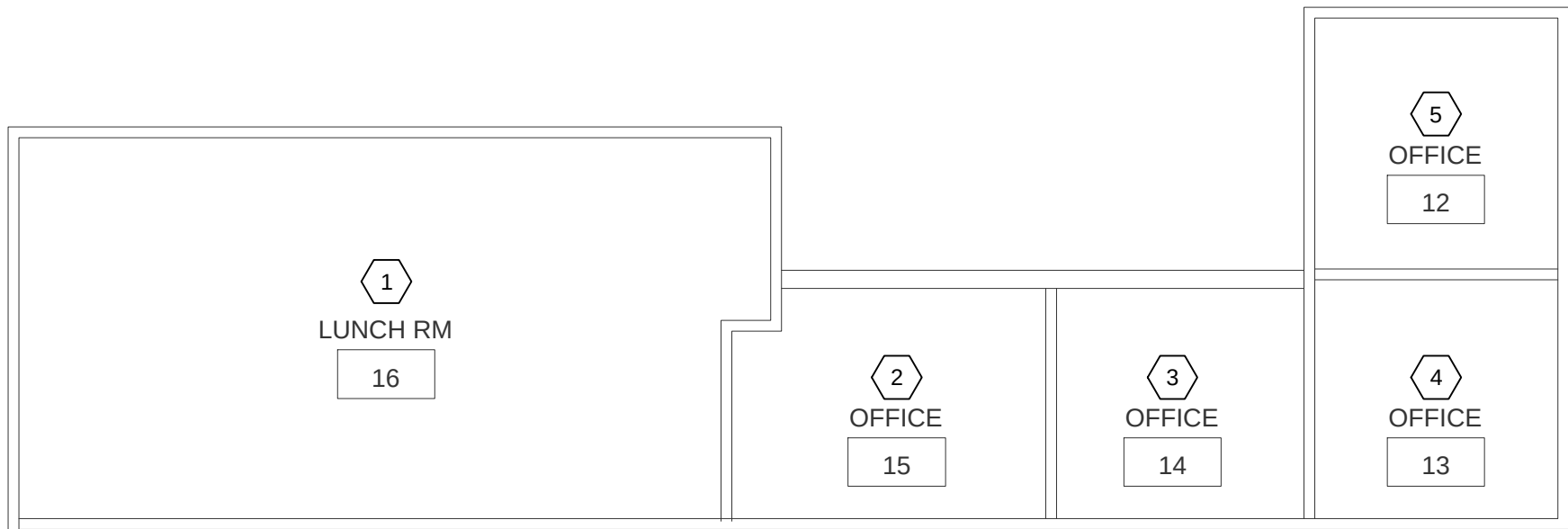
Project:		KESSLER ES	
No:		22-220	
Single Zones	Zone #	Room Name	Outdoor Airflow
RTU-1	1	4TH GRADE	407
RTU-2	1	5TH GRADE	436
RTU-3	1	4TH GRADE	195
	2	CORRIDOR	45
RTU-4	1	4TH GRADE	195
	2	CORRIDOR	45
RTU-5	1	KINDERGARTEN	240
RTU-6	1	3RD GRADE	352
RTU-7	1	SELF CONTAINED	405
RTU-8	1	HIGH NEEDS	318
RTU-9	1	3RD GRADE	404
RTU-10	1	3RD GRADE	434
	2	KINDERGARTEN CORRIDOR	201
RTU-11	1	KINDERGARTEN CORRIDOR	34
	2		235
RTU-12	1	KINDERGARTEN	201
RTU-13	1	KINDERGARTEN	34
RTU-14	1	2ND GRADE	235
RTU-15	1	2ND GRADE	340
RTU-16	1	2ND GRADE	318
	2	CORRIDOR	417
RTU-17	1	2ND GRADE	436
	2	CORRIDOR	188
RTU-18	1	2ND GRADE	33
	2	CORRIDOR	221
RTU-19	1	1ST GRADE	188
RTU-20	1	1ST GRADE	33
RTU-21	1	1ST GRADE	221
	2	LITERACY MATH COACH	337
RTU-22	1	LITERACY MATH COACH	411
	2		377
RTU-23	1	SPEECH MATH COACH	366
	2		171
RTU-24	1	WAITING AREA	537
	2	RECEPTION AREA	368
RTU-25	1	WK ROOM	171
	2		539
RTU-26	1	PRINCIPAL	85
	2	CONF	26
RTU-27	1	FAMILY LAISON	20
	2	READING	131
RTU-28	1	PSYCH	28
	2	MEDIA OFFICE	18
RTU-29	1	READING AREA	17
RTU-30	1	MEDIA CENTER	18
AHU-31	1	AUDITORIUM	163
AHU-32	1	CORRIDOR	214
AHU-33	1	CORRIDOR	690
AHU-34	1	MUSIC	280
AHU-35	1	?	438
SF-2	1	GYM	300
			334
			2,890
			57
			56
			387
			337
			237

1. BALANCING NOTES

2. CONTRACTOR SHALL BALANCE ALL HVAC SYSTEMS TO PROVIDE THE MINIMUM OUTDOOR AIR CFM AS SCHEDULED.
3. FOR UNITS THAT SERVE MULTIPLE ZONES, CONTRACTOR SHALL MEASURE EXISTING SUPPLY AIR FLOW TO EACH SPACE AND THE TOTAL AIRFLOW OF THAT HVAC UNIT. SUBMIT MEASUREMENTS TO MECHANICAL ENGINEER WHO WILL USE INFORMATION TO PROVIDE FOR OUTSIDE AIR CALCULATIONS FOR THAT UNIT.
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KEYED NOTES

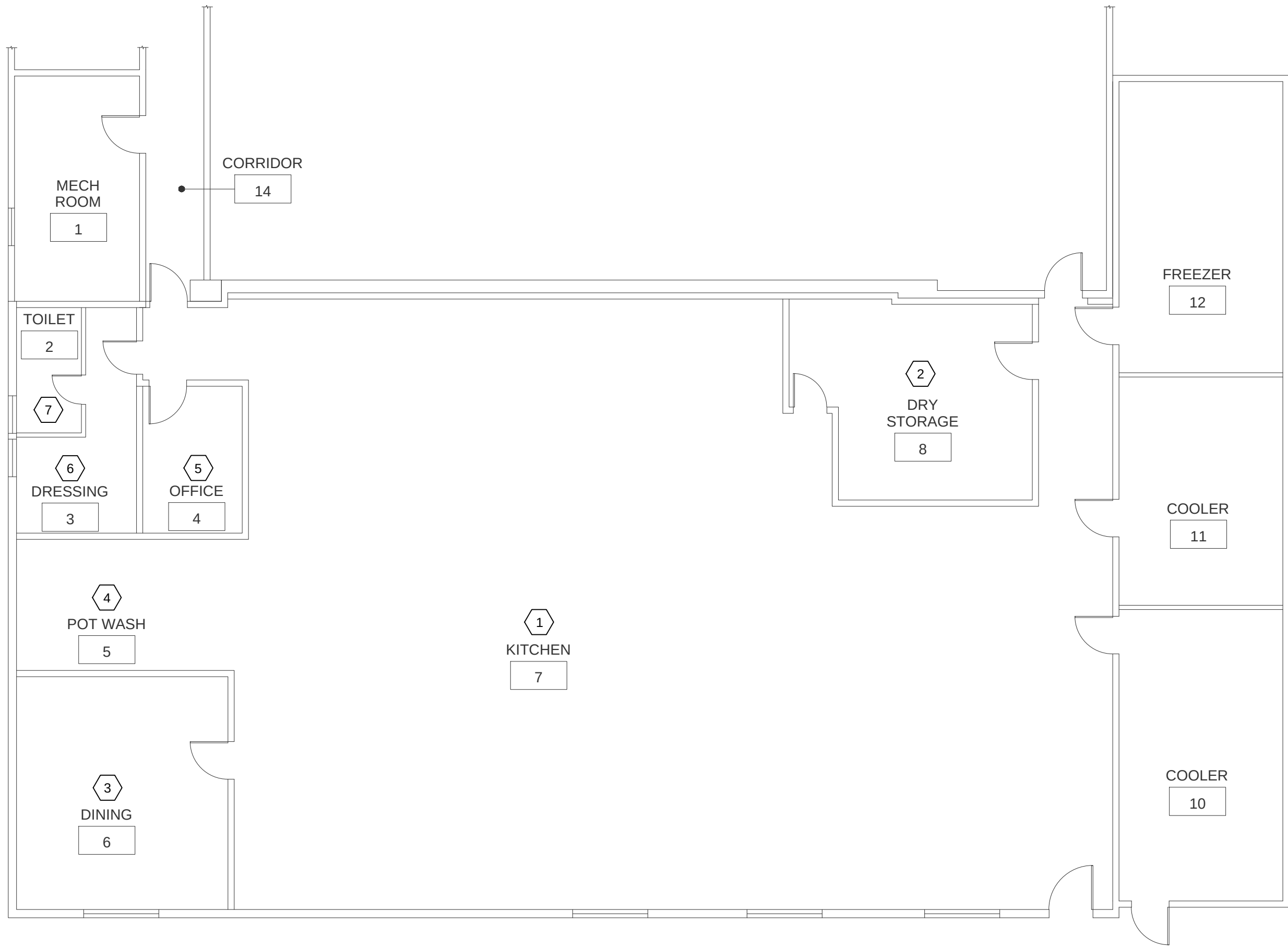
1 SINGLE ZONE SYSTEM



TRANSPORTATION & MAINTENANCE
OFFICES FLOOR PLAN - VENTILATION

NTS

2
M1.5



CENTRAL KITCHEN FLOOR PLAN - VENTILATION

NTS

1
M1.5

OA VENTILATION CALCULATION
PER IMC 2018

Building: Transportation and Maintenance Offices

Multi-Zone Unit	Zone Number	Room Name	Supply Air	AHU Total OA
AC-1	1	Lunch Room	1200	200
	2	Office 15	300	
	3	Office 14	250	
	4	Office 13	280	
	5	Office 12	250	
Total			2280	

Building: Central Kitchen

Multi-Zone Unit	Zone Number	Room Name	Supply Air	AHU Total OA
HV-1-6	1	Kitchen	11700	15100
	2	Dry Storage	1400	
	3	Dining	500	
	4	Pot Wash	1200	
	5	Office	100	
	6	Dressing	100	
	7	Restroom	100	
Total			15100	

BALANCING NOTES

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KEYED NOTES

① ZONE NUMBER

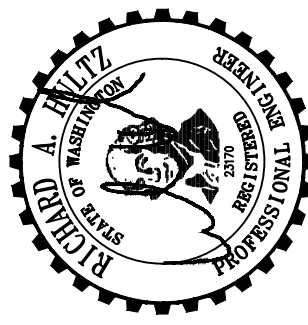
TRANSPORTATION & MAINTENANCE
OFFICE NOTES

- EXISTING HVAC SYSTEM CONSISTS OF A SINGLE ROOFTOP HVAC UNIT PROVIDING HEATING, VENTILATION, AND AIR CONDITIONING TO THE SPACES.

CENTRAL KITCHEN NOTES

- EXISTING HVAC SYSTEM CONSISTS OF SIX HEATING AND VENTILATING (HV) UNITS SERVING THE SPACES. HV UNITS ARE ON 100% OUTSIDE AIR WHEN KITCHEN HOOD EXHAUST FANS ARE RUNNING.

integrus
ARCHITECTURE



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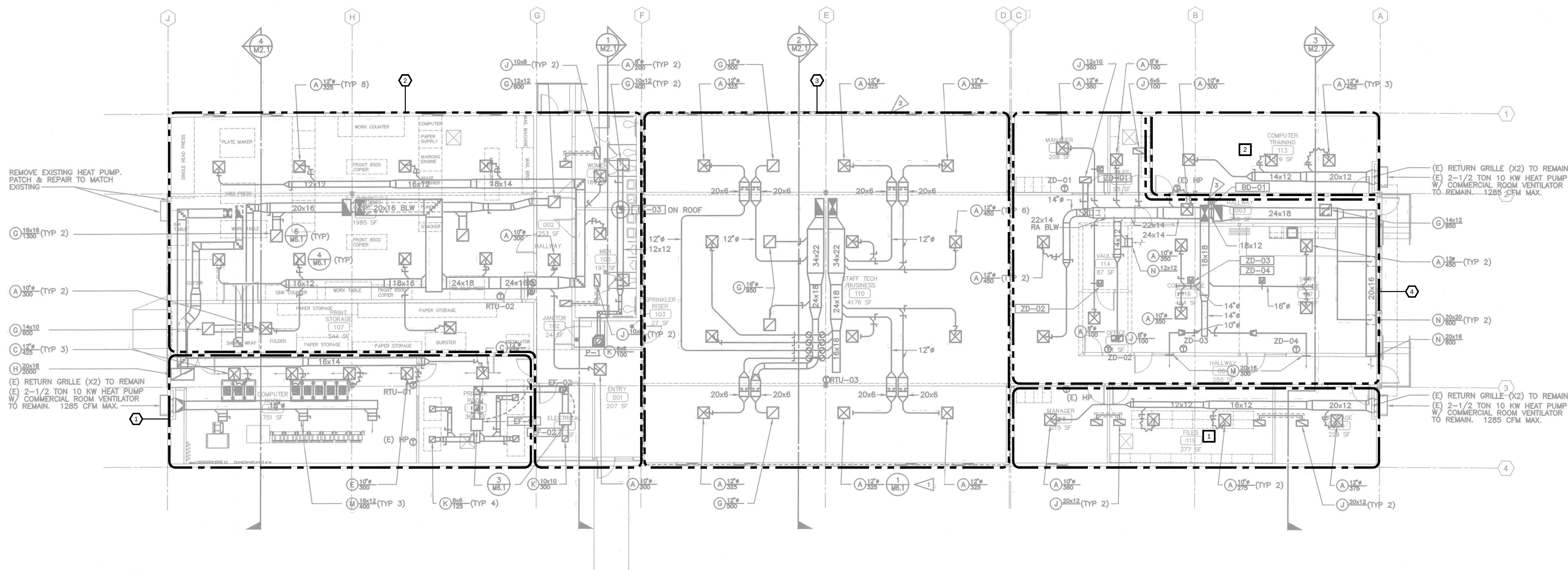
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VENTILATION
CALCULATIONS -
CENTRAL KITCHEN,
T & M OFFICES

M1.5

LONGVIEW SCHOOL DISTRICT
INDOOR AIR QUALITY IMPROVEMENTS
AIR BALANCING
2715 LILAC STREET
LONGVIEW, WA 98632



FLOOR PLAN - VENTILATION 1
NTS M1.6

OA VENTILATION CALCULATION
PER IMC 2018 (Ev Simplified Procedure Per State Amendment)

Project: Business Office
No: 22-220

HVAC Unit	Zone #	Name	Total Outdoor Airflow
RTU-01	1	Computer Room	300
	2	Printer Room	
RTU-02	1	Print Shop	250
	2	Print Storage	
	3	Corridor	
RTU-03	1	Staff Tech Business	300
RTU-04	1	Manager	300
	2	Corridor	
	3	Office	
	4	Conference	
	5	Staff Lounge	
Exist HP-1	1	Manager 118	30
	2	Files	
	3	Storage	
Exist HP-2	1	Computer Training 113	90
	2	Files	
	3	Manager 111	

BALANCING NOTES

- CONTRACTOR SHALL BALANCE ALL HVAC SYSTEMS TO PROVIDE THE MINIMUM OUTDOOR AIR CFM AS SCHEDULED.
- FOR UNITS THAT SERVE MULTIPLE ZONES, CONTRACTOR SHALL MEASURE EXISTING SUPPLY AIR FLOW TO EACH SPACE AND THE TOTAL AIRFLOW OF THAT HVAC UNIT. SUBMIT MEASUREMENTS TO MECHANICAL ENGINEER WHO WILL USE INFORMATION TO PROVIDE FOR OUTSIDE AIR CALCULATIONS FOR THAT UNIT.
- WHERE EXISTING HVAC SYSTEM IS PROVIDED WITH CO2 CONTROLS, THE SCHEDULED MINIMUM OUTDOOR AIR CFM MAY BE REDUCED TO 50% OF THE CALCULATED VALUE.
- LIMITED MECHANICAL AS BUILTS ARE AVAILABLE FOR USE BY CONTRACTOR; CONTACT OWNER.

KEYED NOTES

- ROOFTOP GAS PACK WITH ELECTRIC COOLING (RTU-#).
- WALL MOUNTED HEAT PUMP.

Date:	6/1/2023
Job No.:	22220.00
Drawn By:	NG
Checked by:	NRH
Revisions	
#	Date Description

VENTILATION
CALCULATIONS -
BUSINESS OFFICE

M1.6



FLOOR PLAN - VENTILATION

1

NTS

M1.7

OA VENTILATION CALCULATION
PER IMC 2018

Project: ADMINISTRATIVE BUILDING
No: 22-220

Unit No.	Room No.	Room Name	Outdoor Airflow
-	R-1	WORK AREA	110
-	R-5	OFFICE	20
-	R-6	OFFICE	20
-	R-7	OFFICE	20
-	R-8	OFFICE	20
-	R-9	OFFICE	20
-	R-10	LOUNGE	50
-	R-18	WORK AREA	30
-	R-21	SECRETARY	20
-	R-22	SUPERINTENDENT	20
-	R-23	ASST. SUPT.	20
-	R-24	ASST. SUPT.	20
-	R-27	BOARD MEETING RM	90
-	R-28	LIBRARY	150
AC-1	R-4	WORK AREA	170
	R-12	CONFERENCE	
	R-13	CONFERENCE	
AC-2	R-2	WAITING	125
	R-16	LOBBY	
	R-19	WAITING	

BALANCING NOTES

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KEYED NOTES

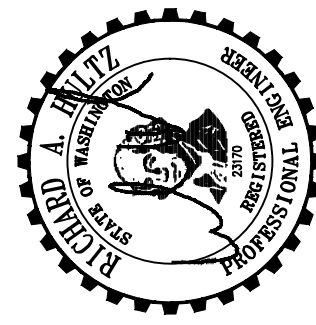
- 1 SINGLE ZONE AC UNIT
2 MULTI-ZONE AC UNIT

LONGVIEW SCHOOL DISTRICT
INDOOR AIR QUALITY IMPROVEMENTS
AIR BALANCING
2715 LILAC STREET
LONGVIEW, WA 98632

Date:	6/1/2023
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VENTILATION
CALCULATIONS -
ADMIN. BLDG

M1.7



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