



GARCIA, GALUSKA & DeSOUSA
Consulting Engineers Inc.

375 Faunce Corner Road, Suite D
Dartmouth, Massachusetts 02747-1258

T: 508-998-5700 • F: 508-998-0883 • E: info@g-g-d.com

SPACE AIR-EXCHANGE PER HOUR CALCULATOR

Baldwin School, 85 Oxford St, Cambridge, MA 02138

7/14/2021

ROOM NAME/#	SERVED BY	CEILING HEIGHT (FT)	FLOOR AREA (FT ²)	VOLUME (FT ³)	TOTAL SUPPLY AIR (FT ³ /MIN)	VENTILATION AIRFLOW IN (FT ³ /MIN)	EXHAUST/ RETURN AIRFLOW OUT (FT ³ /MIN)	TOTAL AIR CHANGES PER HOUR (O.A. PLUS RECIRC. AIR)	AIR EXCHANGES PER HOUR (O.A. ONLY)	FILTER MERV RATING
028 Gymnasium (Including Stage)	HVAC-1	24.4	5995.0	146373.9	7480	1449	6950	3.1	0.6	13
029 Gym Storage	EF	9.0	148.0	1332.0			0	0.0	0.0	#N/A
031 Gym Storage	EF	9.0	236.0	2124.0			0	0.0	0.0	#N/A
026 Stage (Part of Gym)	HVAC-1	21.0	1495.0	31395.0		PART OF GYM		0.0	0.0	13
030 Office	FCU	9.0	149.4	1344.6	168	85	83	7.5	3.8	5
023 Stage Storage	EF	9.0	674.5	6070.5		NO TAB DATA				#N/A
Stage storage small	EF	9.0	277.8	2499.8		NO TAB DATA				#N/A
002 Music	HVAC-2	9.0	840.4	7563.2	1875	0 VVC	0 VVC	14.0	0.0	13
003 / 022 Ensemble	HVAC-2	8.0	664.0	5312.0	773	773		8.7	8.7	13
003S / 022S Ensemble Storage	EF	8.0	81.5	652.0		TAB UNABLE TO ACCES		0.0	0.0	#N/A
003E / 022E Electric Room	EF	9.0	54.0	486.0			48	5.9	0.0	#N/A
021 Corridor (Outside 003)	HVAC-2	9.7	367.0	3559.9	93	0		1.6	0.0	13
002 Corridor	HVAC-2	9.0	2196.4	19767.2	184	184		0.6	0.6	13
003 Cafeteria	HVAC-2	9.0	2940.0	26460.0	4051	4051		9.2	9.2	13
004 Cafeteria Storage	EF	9.0	120.0	1080.0			62	3.4	0.0	#N/A
005 Kitchen (& Locker)	HVAC-2	9.0	900.0	8100.0	943	943		7.0	7.0	13
006 Dry Food Storage	EF	9.0	82.5	742.5			67	5.4	0.0	#N/A
007 Dry Storage	EF	9.0	84.0	756.0			180	14.3	0.0	#N/A
008 Kitchen Toilet	EF	9.0	61.5	553.1			127	13.8	0.0	#N/A
009 Janitor Closet	EF	9.0	116.0	1044.0			151	8.7	0.0	#N/A
024 Mechanical Room		9.0	691.5	6223.5		NO TAB DATA				#N/A
007 / 012 Adaptive PE	HVAC-2	9.8	340.5	3319.9	233	233		4.2	4.2	13
008 / 013 Community Activity Room	HVAC-2	9.8	820.0	8036.0	1077	1077		8.0	8.0	13
014 Boys Toilet	EF	9.0	225.8	2032.2			530	15.6	0.0	#N/A
015 Girls Toilet	EF	9.0	233.4	2100.6			442	12.6	0.0	#N/A
016 Shower	EF	9.0	72.5	652.5			50	4.6	0.0	#N/A
008a / 017 Office	HVAC-2	9.0	85.0	765.0	150	150		11.8	11.8	13
016 Elev Mach Rm	HVAC-2	9.0	48.0	432.0	623	623		86.5	86.5	13
112 Staff Toilet	EF	9.0	222.0	1998.0			158	4.7	0.0	#N/A
114 Public Toilet	EF	9.0	232.0	2088.0			87	2.5	0.0	#N/A
115 Janitor's Closet	EF	9.0	74.0	666.0			151	13.6	0.0	#N/A

ROOM NAME/#	SERVED BY	CEILING HEIGHT (FT)	FLOOR AREA (FT ²)	VOLUME (FT ³)	TOTAL SUPPLY AIR (FT ³ /MIN)	VENTILATION AIRFLOW IN (FT ³ /MIN)	EXHAUST/ RETURN AIRFLOW OUT (FT ³ /MIN)	TOTAL AIR CHANGES PER HOUR (O.A. PLUS RECIRC. AIR)	AIR EXCHANGES PER HOUR (O.A. ONLY)	FILTER MERV RATING
113 Corridor	HVAC-2	9.0	496.2	4465.8	117	117		1.6	1.6	13
121 Lobby	HVAC-2	9.0	714.1	6426.9	129	129		1.2	1.2	13
129 Exterior Storage		9.0	96.0	864.0		NO TAB DATA				#N/A
130 Mechanical Room		9.0	160.0	1440.0		NO TAB DATA				#N/A
128 Custodial Office	HVAC-2	8.5	297.4	2527.9	310	310		7.4	7.4	13
127 Electric Room		9.0	144.0	1296.0		NO TAB DATA				#N/A
000 Corridor (Outside Cust Office)		9.0	198.0	1782.0		NO TAB DATA				#N/A
106 Main Office	HVAC-2	9.0	493.3	4439.3	230	230		3.1	3.1	13
Principal	HVAC-4	9.0	226.6	2039.4	72	72		2.1	2.1	13
Rm 101 B	HVAC-4	9.0	50.0	450.0	77	77		10.3	10.3	13
Rm 101 C	HVAC-4	9.0	205.0	1845.0	117	117		3.8	3.8	13
Rm 101 D	HVAC-4	9.0	125.7	1131.0	82	82		4.4	4.4	13
102 Kindergarten	HVAC-16	9.0	883.0	7947.0	1623	1571	50	12.3	11.9	13
102S Kindergarten Storage	EF	9.0	40.0	360.0			97	16.2	0.0	#N/A
102T K Toilet	EF	9.0	60.0	540.0			181	20.1	0.0	#N/A
103 / 122	HVAC-2	9.0	146.7	1320.3	48	48		2.2	2.2	13
104 Kindergarten	HVAC-16	9.0	1021.0	9189.0	1317	1274	45	8.6	8.3	13
104S Kindergarten Storage	EF	9.0	133.2	1198.8			143	7.2	0.0	#N/A
104T K Toilet	EF	9.0	60.0	540.0			118	13.1	0.0	#N/A
105 / 117 Parent Office	HVAC-2	9.0	121.0	1089.0	80	80		4.4	4.4	13
Rm 106	HVAC-4	9.0	177.0	1593.0	461	461		17.4	17.4	13
Rm 107	HVAC-4	9.0	101.3	912.0	114	114		7.5	7.5	13
Rm 108	HVAC-4	9.0	114.0	??	105	105		0.0	0.0	13
Main entrance small		9.0	64.0	576.0		NO TAB DATA				#N/A
103 Lobby (Stairs Up & Dn.)	HVAC-2	9.0	478.6	4307.4	200	200		2.8	2.8	13
105 Corridor near Lobby	HVAC-2	9.0	319.7	2877.3	65	65		1.4	1.4	13
Stairs down near dr 6		9.0	152.3	1370.3		NO TAB DATA				#N/A
Door 7 entrance rm		9.0	64.0	576.0		NO TAB DATA				#N/A
201 Teacher Workroom	HVAC-4	10.5	280.0	2940.0	228	58	170	4.7	1.2	13
216 Stair		9.0	280.0	2520.0		NO TAB DATA				#N/A
202 Grade 4 Classroom	HVAC-15	10.0	780.0	7800.0	1881	1860	0	14.5	14.3	13
202/203 Workroom	HVAC-15	7.3	100.0	733.0	248	245	0	20.3	20.1	13
203 Grade 4 Classroom	HVAC-15	10.0	752.0	7520.0	1665	1647	42	13.3	13.1	13
205 Grade 3 Classroom	HVAC-14	10.0	752.0	7520.0	1574	1550	23	12.6	12.4	13
206 Workroom	HVAC-14	9.0	100.0	900.0	500	492	7	33.3	32.8	13
207 Grade 2 Classroom	HVAC-14	10.0	752.0	7520.0	1653	1627	28	13.2	13.0	13
208 Grade 1 Classroom	HVAC-13	9.0	746.3	6716.3	1733	1702	44	15.5	15.2	13
209 Workroom	HVAC-13	9.0	145.3	1307.7	348	342	0	16.0	15.7	13
210 Grade 1 Classroom	HVAC-13	9.0	746.3	6716.3	1885	1851	28	16.8	16.5	13

ROOM NAME/#	SERVED BY	CEILING HEIGHT (FT)	FLOOR AREA (FT ²)	VOLUME (FT ³)	TOTAL SUPPLY AIR (FT ³ /MIN)	VENTILATION AIRFLOW IN (FT ³ /MIN)	EXHAUST/ RETURN AIRFLOW OUT (FT ³ /MIN)	TOTAL AIR CHANGES PER HOUR (O.A. PLUS RECIRC. AIR)	AIR EXCHANGES PER HOUR (O.A. ONLY)	FILTER MERV RATING
211 Special Ed (FCU-160-C)	HVAC-4	9.0	229.4	2065.0	0 FNE	0 FNE	0 FNE	0.0	0.0	13
212 Grade 2 Classroom	HVAC-12	10.0	752.0	7520.0	1975	1603	374	15.8	12.8	13
213 Workroom	HVAC-12	7.3	100.0	733.0	405	329	110	33.2	26.9	13
214 Grade 3 Classroom	HVAC-12	10.0	752.0	7520.0	2074	1683	356	16.5	13.4	13
215 Kindergarten Classroom	HVAC-11	10.0	752.0	7520.0	1290	1290	0	10.3	10.3	13
216 Workroom	HVAC-11	9.0	100.0	900.0	350	350	0	23.3	23.3	13
217 Literacy Classroom	HVAC-11	10.0	780.0	7800	1431	1431	0	11.0	11.0	13
221 Girls Toilet	EF	9.0	184.3	1659.0			425	15.4	0.0	#N/A
222 Boys Toilet	EF	9.0	168.0	1512.0			370	14.7	0.0	#N/A
223 Janitor's Closet	EF	9.0	94.2	848.1			292	20.7	0.0	#N/A
224 Electric Room	EF	9.0	68.0	612.0			129	12.6	0.0	#N/A
225 Staff Toilet	EF	9.0	45.5	409.5			129	18.9	0.0	#N/A
301 Science Resource	HVAC-4	9.0	280.0	2520.0	345	129	216	8.2	3.1	13
302 Grade-7 Classroom	HVAC-10	9.8	422.0	4149.5	954	209	687	13.8	3.0	13
302a Timeout Space	HVAC-10	9.8	48.0	471.8			780	99.2	0.0	13
302b Special Ed	HVAC-10	9.0	510.0	4590.0	880	193		11.5	2.5	13
303 Grade-7/8 Classroom	HVAC-10	9.8	465.0	4571.0	954	209	711	12.5	2.7	13
319 Corridor (outside of 302)	HVAC-10	9.0	87.8	790.2		NO TAB DATA				13
304 Room (FCU-120-C)	HVAC-4	9.8	166.0	1631.8	0 FNE	0 FNE	0 FNE	0.0	0.0	13
305 Grade 6 Classroom	HVAC-9	10.0	752.0	7520.0	1467	1418	37	11.7	11.3	13
306 Workroom	HVAC-9	7.3	100.0	733.0	363	351	10	29.7	28.7	13
307 Grade 6 Classroom	HVAC-9	10.0	752.0	7520.0	875	846	44	7.0	6.7	13
308 Grade 8 Classroom	HVAC-8	9.8	746.3	7335.6	1464	1426	34	12.0	11.7	13
309 Workroom	HVAC-8	7.7	145.3	1113.0	389	379	23	21.0	20.4	13
310 Grade 5 Classroom	HVAC-8	9.8	145.3	1423.9	1507	1468	30	63.5	61.9	13
311 Spec Ed Classroom	HVAC-4	9.8	229.4	2255.4	233	22	211	6.2	0.6	13
312 Grade 6 Classroom	HVAC-7	10.0	752.0	7520.0	1437	1206	236	11.5	9.6	13
313 Workroom	HVAC-7	10.0	100.0	1000.0	262	220	59	15.7	13.2	13
314 Grade 8 Classroom	HVAC-7	10.0	752.0	7520.0	1535	1289	224	12.2	10.3	13
315 Grade 7 Classroom	HVAC-6	10.0	680.0	6800.0	1287	1257	44	11.4	11.1	13
316 Art Classroom	HVAC-6	10.0	753.8	7537.5	1538	1502	29	12.2	12.0	13
318 Kiln	HVAC-6	9.0	43.3	390.0	309	302		47.5	46.4	13
316a Art Storage	EF	9.0	58.0	??		NO TAB DATA				#N/A
Rm 316 extra space		9.0	112.0	??		NO TAB DATA				#N/A
Hallway 3rd floor		9.0	1650.0	14850.0		NO TAB DATA				#N/A
Hallway 4th floor		9.0	1610.0	14490.0		NO TAB DATA				#N/A
321 Girls Toilet	EF	9.0	184.3	1659.0			345	12.5	0.0	#N/A
322 Boys Toilet	EF	9.0	168.0	1512.0			265	10.5	0.0	#N/A
323 Janitor's Closet	EF	9.0	94.2	848.1			207	14.6	0.0	#N/A

ROOM NAME/#	SERVED BY	CEILING HEIGHT (FT)	FLOOR AREA (FT ²)	VOLUME (FT ³)	TOTAL SUPPLY AIR (FT ³ /MIN)	VENTILATION AIRFLOW IN (FT ³ /MIN)	EXHAUST/ RETURN AIRFLOW OUT (FT ³ /MIN)	TOTAL AIR CHANGES PER HOUR (O.A. PLUS RECIRC. AIR)	AIR EXCHANGES PER HOUR (O.A. ONLY)	FILTER MERV RATING
324 Electric Room	EF	9.0	68.0	612.0			167	16.4	0.0	#N/A
325 Staff Toilet	EF	9.0	45.5	409.5			76	11.1	0.0	#N/A
316 Stair		9.0	525.0	4725.0		NO TAB DATA				#N/A
401 Workroom	HVAC-3	8.5	185.0	1572.5	173	34		6.6	1.3	13
404 Student Toilet	EF	9.0	46.0	414.0			114	16.5	0.0	#N/A
402 Lobby	HVAC-3	8.5	400.0	3400.0	174	34	544	3.1	0.6	13
408 Computer	AC UNIT	9.0	117.3	1055.3		NO TAB DATA				#N/A
402 Workroom	HVAC-3	9.0	223.7	2013.3	390	76		11.6	2.3	13
403A Office	HVAC-3	9.0	154.6	1391.4	76	15	544	3.3	0.6	13
405 Staff Toilet	EF	9.0	67.0	603.0			208	20.7	0.0	#N/A
403 Library	HVAC-3	15.8	2157.0	34145.3	1969	382	606	3.5	0.7	13
404 Computer Lab	HVAC-3	8.5	580.5	4934.3	432	84	896	5.3	1.0	13
410 Mechanical Room		9.0	1484.0	13356.0		NO TAB DATA				#N/A
420 Stair		9.0	286.5	2578.5		NO TAB DATA				#N/A
Elevator		9.0	49.0	441.0		NO TAB DATA				#N/A

FNE = "Fan not energized" per Final TAB Report

VVC = "Variable Air Volume Damper Closed" per Final TAB Report

HVAC-6 thru 15 O.A. Dampers likely stuck open based on low R.A. values. Recommend servicing, ensuring proper operation.

There is a FCU likely served from HVAC-4 that is FNE, unable to confirm from existing conditions, serves Copy Room, possibly 107 Workroom?

Avg	12.6	7.2
	OR	0.0