

Global Plasma Solutions
10 Mall Terrace, Building C
Savannah, GA 31406
Phone: (912) 356-0115 Fax: (912) 356-0114
Email: info@globalplasmasolutions.com Web: www.globalplasmasolutions.com
VERSION 1.6 running ASHRAE 62.1-2013

Zone Tag	Facility Type	Zone Use	Zone Floor Area (Square Ft.)	Zone Max Occupancy	Table 6.1 Occupant	Table 6.1 Pz * Rp	Az * Ra	Table 6.2 Ventilation Effectiveness Ez	Outdoor Air to Zone (CFM) with Ez correction (Vbz/Ez)
RTU-9	General	Multi-purpose Assembly	2,368.0	285.2	5.0	0.06	1426	142	0.8

Zone Height (feet)	Supply Air (Vbz)	Return Air (Vr)	Recirc. From Filter (Rf)	Ventilation Effectiveness (Ez)	Filter Location	RVAV Flow Type	Outdoor Air Flow Type
10	0.8	0.8	0.75	0.8	Standing (lock work)	Constant	Constant

Indoor Contaminants	Generated By People	Maximum Threshold Value (PPM)	Steady State Using the VRP* (Prescribed OA)	Steady State Using the IAQ Method (Reduced OA)	Is Steady State Level Acceptable at Reduced OA Levels?	Contaminant Generation Rate (PPM)	Filtration Effectiveness	Cognizant
Acetaldehyde	100.0	0.0118	0.0059	0.0059	Yes	0.0059	50%	ASHRAE
Acetone	250.0	0.00245	0.00122	0.00122	Yes	0.00122	50%	NIOSH
Ammine	25.00	0.0478	0.0239	0.0239	Yes	0.0239	50%	NIOSH
Benzene	1.0000	0.00254	0.00127	0.00127	Yes	0.00127	50%	ASHRAE
2, Butanone (MEK)	200.0	0.0034	0.0017	0.0017	Yes	0.0017	50%	NIOSH
Carbon dioxide**	6000	206	450	450	Yes	450	0%	NIOSH
Chloroform	2.0000	0.0011	0.0005	0.0005	Yes	0.0005	50%	NIOSH
Dioxane	100.0	0.0000	0.0000	0.0000	Yes	0.0000	50%	ASHRAE
Hydrogen Sulfide	10.0	0.0000	0.0000	0.0000	Yes	0.0000	50%	NIOSH
Methane	NA	1.6000	1.6000	1.6000	Yes	1.6000	0%	NI
Methane	200.0	0.0000	0.0000	0.0000	Yes	0.0000	0%	NIOSH
Methylene Chloride	25.0	0.0011	0.0005	0.0005	Yes	0.0005	50%	ASHRAE
Propane	1000.0	0.0098	0.0049	0.0049	Yes	0.0049	0%	NIOSH
Tetrachloroethane	8.0000	0.0000	0.0000	0.0000	Yes	0.0000	50%	ASHRAE
Tetrachloroethylene	100.0000	0.0001	0.0000	0.0000	Yes	0.0000	50%	ASHRAE
Toluene	100.0000	0.0037	0.0019	0.0019	Yes	0.0019	50%	NIOSH
1,1,1-Trichloroethane	300.0000	0.0064	0.0032	0.0032	Yes	0.0032	50%	NIOSH
Xylene	100.0000	0.0020	0.0010	0.0010	Yes	0.0010	50%	ASHRAE

Carbon dioxide**

Building materials and furnishings assumed to have no VOCs and off-gassing is complete. All systems should be tested for proper operation.

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IMC 2006 & later allows for ASHRAE 62 IAQP through the engineered exception found in Section 402.3 Exhaust flow rates may differ from Table 6.5 based on ASHRAE 62 IAQP via Section 6.5.2

BELLA TERRA OUTSIDE AIR CALCULATIONS

RTU-1		Total CFM	697
DAYCARE (THROUGH AGE 4)			
OCC DENSITY= 25 PEOPLE / 1000 SQ.FT.			
941 X 25 / 1000 = 24 PEOPLE			
Rp	Pz	Ra	Az
10	24	0.18	941
Vbz = (10 X 24) + (0.18 X 941) = 410 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 513 CFM			

CORRIDORS		Total CFM	252
OCC DENSITY= 0 PEOPLE / 1000 SQ.FT.			
252 X 0 / 1000 = 0 PEOPLE			
Rp	Pz	Ra	Az
0	0	0.06	252
Vbz = (0 X 0) + (0.06 X 252) = 16 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 20 CFM			

OFFICE SPACE		Total CFM	286
OCC DENSITY= 5 PEOPLE / 1000 SQ.FT.			
286 X 5 / 1000 = 2 PEOPLE			
Rp	Pz	Ra	Az
5	2	0.06	286
Vbz = (5 X 2) + (0.06 X 286) = 28 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 35 CFM			

STORAGE ROOMS		Total CFM	98
OCC DENSITY= 0 PEOPLE / 1000 SQ.FT.			
98 X 0 / 1000 = 0 PEOPLE			
Rp	Pz	Ra	Az
0	0	0.12	98
Vbz = (0 X 0) + (0.12 X 98) = 12 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 15 CFM			

RECEPTION AREAS		Total CFM	419
OCC DENSITY= 30 PEOPLE / 1000 SQ.FT.			
419 X 30 / 1000 = 13 PEOPLE			
Rp	Pz	Ra	Az
5	13	0.06	419
Vbz = (5 X 13) + (0.06 X 419) = 91 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 114 CFM			

NOTE: TOTAL OUTSIDE AIR REQUIRED 697 CFM. TOTAL OUTSIDE AIR PROVIDED BY ROOFTOP UNIT RTU-1 710 CFM.

RTU-2		Total CFM	716
DAYCARE (THROUGH AGE 4)			
OCC DENSITY= 25 PEOPLE / 1000 SQ.FT.			
1250 X 25 / 1000 = 32 PEOPLE			
Rp	Pz	Ra	Az
10	32	0.18	1,250
Vbz = (10 X 32) + (0.18 X 1,250) = 545 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 682 CFM			

CORRIDORS		Total CFM	306
OCC DENSITY= 0 PEOPLE / 1000 SQ.FT.			
306 X 0 / 1000 = 0 PEOPLE			
Rp	Pz	Ra	Az
0	0	0.06	306
Vbz = (0 X 0) + (0.06 X 306) = 19 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 24 CFM			

STORAGE ROOMS		Total CFM	62
OCC DENSITY= 0 PEOPLE / 1000 SQ.FT.			
62 X 0 / 1000 = 0 PEOPLE			
Rp	Pz	Ra	Az
0	0	0.12	62
Vbz = (0 X 0) + (0.12 X 62) = 8 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 10 CFM			

NOTE: TOTAL OUTSIDE AIR REQUIRED 716 CFM. TOTAL OUTSIDE AIR PROVIDED BY ROOFTOP UNIT RTU-2 720 CFM.

RTU-3		Total CFM	779
DAYCARE (THROUGH AGE 4)			
OCC DENSITY= 25 PEOPLE / 1000 SQ.FT.			
1416 X 25 / 1000 = 36 PEOPLE			
Rp	Pz	Ra	Az
10	36	0.18	1,416
Vbz = (10 X 36) + (0.18 X 1,416) = 615 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 769 CFM			

STORAGE ROOMS		Total CFM	62
OCC DENSITY= 0 PEOPLE / 1000 SQ.FT.			
62 X 0 / 1000 = 0 PEOPLE			
Rp	Pz	Ra	Az
0	0	0.12	62
Vbz = (0 X 0) + (0.12 X 62) = 8 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 10 CFM			

NOTE: TOTAL OUTSIDE AIR REQUIRED 779 CFM. TOTAL OUTSIDE AIR PROVIDED BY ROOFTOP UNIT RTU-3 780 CFM.

RTU-4		Total CFM	790
DAYCARE (THROUGH AGE 4)			
OCC DENSITY= 25 PEOPLE / 1000 SQ.FT.			
1396 X 25 / 1000 = 35 PEOPLE			
Rp	Pz	Ra	Az
10	35	0.18	1,396
Vbz = (10 X 35) + (0.18 X 1,396) = 602 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 753 CFM			

CORRIDORS		Total CFM	350
OCC DENSITY= 0 PEOPLE / 1000 SQ.FT.			
350 X 0 / 1000 = 0 PEOPLE			
Rp	Pz	Ra	Az
0	0	0.06	350
Vbz = (0 X 0) + (0.06 X 350) = 21 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 27 CFM			

STORAGE ROOMS		Total CFM	62
OCC DENSITY= 0 PEOPLE / 1000 SQ.FT.			
62 X 0 / 1000 = 0 PEOPLE			
Rp	Pz	Ra	Az
0	0	0.12	62
Vbz = (0 X 0) + (0.12 X 62) = 8 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 10 CFM			

NOTE: TOTAL OUTSIDE AIR REQUIRED 790 CFM. TOTAL OUTSIDE AIR PROVIDED BY ROOFTOP UNIT RTU-4 790 CFM.

RTU-5		Total CFM	820
CLASSROOMS (AGES 5-8)			
OCC DENSITY= 25 PEOPLE / 1000 SQ.FT.			
1726 X 25 / 1000 = 44 PEOPLE			
Rp	Pz	Ra	Az
10	44	0.12	1,726
Vbz = (10 X 44) + (0.12 X 1,726) = 548 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 810 CFM			

STORAGE ROOMS		Total CFM	62
OCC DENSITY= 0 PEOPLE / 1000 SQ.FT.			
62 X 0 / 1000 = 0 PEOPLE			
Rp	Pz	Ra	Az
0	0	0.12	62
Vbz = (0 X 0) + (0.12 X 62) = 8 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 10 CFM			

NOTE: TOTAL OUTSIDE AIR REQUIRED 820 CFM. TOTAL OUTSIDE AIR PROVIDED BY ROOFTOP UNIT RTU-5 820 CFM.

RTU-6		Total CFM	818
CLASSROOMS (AGES 5-8)			
OCC DENSITY= 25 PEOPLE / 1000 SQ.FT.			
1694 X 25 / 1000 = 43 PEOPLE			
Rp	Pz	Ra	Az
10	43	0.12	1,694
Vbz = (10 X 43) + (0.12 X 1,694) = 634 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 793 CFM			

CORRIDORS		Total CFM	190
OCC DENSITY= 0 PEOPLE / 1000 SQ.FT.			
190 X 0 / 1000 = 0 PEOPLE			
Rp	Pz	Ra	Az
0	0	0.06	190
Vbz = (0 X 0) + (0.06 X 190) = 12 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 15 CFM			

STORAGE ROOMS		Total CFM	62
OCC DENSITY= 0 PEOPLE / 1000 SQ.FT.			
62 X 0 / 1000 = 0 PEOPLE			
Rp	Pz	Ra	Az
0	0	0.12	62
Vbz = (0 X 0) + (0.12 X 62) = 8 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 10 CFM			

NOTE: TOTAL OUTSIDE AIR REQUIRED 818 CFM. TOTAL OUTSIDE AIR PROVIDED BY ROOFTOP UNIT RTU-6 840 CFM.

RTU-7		Total CFM	622
CLASSROOMS (AGES 5-8)			
OCC DENSITY= 25 PEOPLE / 1000 SQ.FT.			
878 X 25 / 1000 = 22 PEOPLE			
Rp	Pz	Ra	Az
10	22	0.12	878
Vbz = (10 X 22) + (0.12 X 878) = 326 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 408 CFM			

CORRIDORS		Total CFM	196
OCC DENSITY= 0 PEOPLE / 1000 SQ.FT.			
196 X 0 / 1000 = 0 PEOPLE			
Rp	Pz	Ra	Az
0	0	0.06	196
Vbz = (0 X 0) + (0.06 X 196) = 12 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 15 CFM			

BREAK ROOMS		Total CFM	106
OCC DENSITY= 25 PEOPLE / 1000 SQ.FT.			
106 X 25 / 1000 = 3 PEOPLE			
Rp	Pz	Ra	Az
5	3	0.06	106
Vbz = (5 X 3) + (0.06 X 106) = 22 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 28 CFM			

LAUNDRY ROOMS		Total CFM	85
OCC DENSITY= 10 PEOPLE / 1000 SQ.FT.			
85 X 10 / 1000 = 1 PEOPLE			
Rp	Pz	Ra	Az
20	1	0.06	85
Vbz = (20 X 1) + (0.06 X 85) = 20 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 33 CFM			

STORAGE ROOMS		Total CFM	916
OCC DENSITY= 0 PEOPLE / 1000 SQ.FT.			
916 X 0 / 1000 = 0 PEOPLE			
Rp	Pz	Ra	Az
0	0	0.12	916
Vbz = (0 X 0) + (0.12 X 916) = 110 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 138 CFM			

NOTE: TOTAL OUTSIDE AIR REQUIRED 622 CFM. TOTAL OUTSIDE AIR PROVIDED BY ROOFTOP UNIT RTU-7 625 CFM.

RTU-8		Total CFM	112
KITCHEN (COOKING)			
OCC DENSITY= 20 PEOPLE / 1000 SQ.FT.			
290 X 20 / 1000 = 6 PEOPLE			
Rp	Pz	Ra	Az
7.5	6	0.12	290
Vbz = (7.5 X 6) + (0.12 X 290) = 80 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 100 CFM			

STORAGE ROOMS		Total CFM	58
OCC DENSITY= 0 PEOPLE / 1000 SQ.FT.			
58 X 0 / 1000 = 0 PEOPLE			
Rp	Pz	Ra	Az
0	0	0.12	58
Vbz = (0 X 0) + (0.12 X 58) = 7 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 9 CFM			

STORAGE ROOMS		Total CFM	916
OCC DENSITY= 0 PEOPLE / 1000 SQ.FT.			
916 X 0 / 1000 = 0 PEOPLE			
Rp	Pz	Ra	Az
0	0	0.12	916
Vbz = (0 X 0) + (0.12 X 916) = 110 CFM			
AIR DISTRIB. EFF. (Ez) = 0.8			
Total OA Required = 138 CFM			

NOTE: TOTAL OUTSIDE AIR REQUIRED 112 CFM. TOTAL OUTSIDE AIR PROVIDED BY ROOFTOP UNIT RTU-8 300 CFM.

RTU-9		Total CFM	1,960
MULTI-PURPOSE ASSEMBLY			