City of Brainerd - Building Safety Division

Worksheet VMCA-1

2020 Mechanical & Energy Code – Ventilation, Makeup and Combustion Air Calculations

Please submit at time of application of a mechanical permit for new construction.

PROJECT ADDRESS	CONTRACTOR

SECTION A

Ventilation Quantity (Determine total ventilation rate (cfm) by using the attached Table R403.5.2 or Equation R403.5.2)			
Square Feet of Conditioned Area (including basement, crawl spaces and any unfinished spaces.)		Total Ventilation Rate (cfm)	
Number of Bedrooms		Continuous Ventilation Rate (cfm)	

SECTION B

Ventilation Method			
System	**Manufacture**	**Model Number**	**Low / High cfm**
☐ Heat Recovery Ventilator (HRV) ☐ Energy Recovery Ventilator (ERV) ☐ Supply/Exhaust Fans (Balanced)			

Ventilation Fans – Exhaust and Supplemental		
Description (Range Hood, Bath, Utility, etc)	**Location**	**Total cfm**

SECTION C

Make-up Air for Exhaust Appliances in Dwelling Units (A completed copy of worksheet MA-1 must be provided)		
☐ No Make-up Air Required ☐ Make-up Air Required (See Table 501.4.2)	**CFM Needed**	**Duct Diameter and Type ***

SECTION D

Combustion Air (A complete copy of worksheet CA-1 must be provided)	
Method of Suppling Combustion Air	**Duct Diameter and Type ***
☐ No Combustion Air Required ☐ All Indoor Air ☐ All Outdoor Air ☐ Combination Indoor and Out ☐ Mechanical Combustion Air Supply ☐ Engineered Design	

SECTION E

Gas and Solid Fuel Appliances (Attach sheet for additional appliances)			
Appliance	**Fuel Type**	**BTU's**	**Vent Type – (Direct, Powered or Draft)**

***- If flexible duct is used, increase the duct diameter by 1 inch.**

SECTION A
TABLE R403.5.2 – VENTILATION QUANTITY

Bedrooms	1	2	3	4	5	6
Conditioned space[1] (in sq. ft.)	**Total/ Continuous**	**Total/ Continuous**	**Total/ Continuous**	**Total/ Continuous**	**Total/ Continuous**	**Total/ Continuous**
1000-1500	60/40	75/40	90/45	105/53	120/60	135/68
1501-2000	70/40	85/43	100/50	115/58	130/65	145/73
2001-2500	80/40	95/48	110/55	125/63	140/70	155/78
2501-3000	90/45	105/53	120/60	135/68	150/75	165/83
3001-3500	100/50	115/58	130/65	145/73	160/80	175/88
3501-4000	110/55	125/63	140/70	155/78	170/85	185/93
4001-4500	120/60	135/68	150/75	165/83	180/90	195/98
4501-5000	130/65	145/73	160/80	175/88	190/95	205/103
5001-5500	140/70	155/78	170/85	185/93	200/100	215/108
5501-6000[2]	150/75	165/83	180/90	195/98	210/105	225/113

1. Conditioned space includes the basement and conditioned crawl spaces.

2. If conditioned space exceeds 6,000 sq. ft. or there are more than 6 bedrooms, use Equation R403.5.2

Equation R403.5.2

Total ventilation rate (cfm) = (0.02 × square feet of conditioned space) + [15 × (number of bedrooms + 1)]

Equation R403.5.2.1

Continuous ventilation rate (cfm) = Total ventilation rate/2