

HVAC EQUIPMENT DESIGN FORM

Use this checklist for one- and two-family dwellings and townhouses of any height. Groups R-2, R-3, and R-4 three stories or less in height above grade plane use the Group R version.

Address: _____ Permit #: _____ Date: _____

Permit holder: _____ Phone: _____

Homes pursuing ENERGY STAR certification may attach a completed ENERGY STAR National HVAC Design Report in lieu of completing the remainder of this form. Otherwise, complete the following information.

Mandatory Items:

- N1103.1.1** Thermostats shall be programmable
- N1103.3.1** Ducts in unconditioned spaces $\geq 3''$ diameter shall be insulated to $\geq R-8$ in attics and $\geq R-6$ elsewhere
- N1103.3.1** Ducts in unconditioned spaces $< 3''$ diameter shall be insulated to $\geq R-6$ in attics and $\geq R-4.2$ elsewhere
- N1103.3.2.1** Air handler shall have a manufacturer's designation of $\leq 2\%$ air leakage when tested per ASHRAE 193
- N1103.3.3** The *Duct and Envelope Testing* form shall be completed and submitted to the inspector
- N1103.4** HVAC pipe insulation is R-3 minimum (e.g. hydronic systems, refrigerant lines) and outdoor insulation is protected
- N1103.7** Manual J report or other approved forms, including heating and cooling design loads, shall be submitted to the inspector
- N1103.7** Heating and cooling equipment shall be selected in accordance with Manual S, based on loads calculated in accordance with Manual J
- Manual S.** Specified cooling equipment capacity shall be ≤ 1.15 times the design load or the next larger nominal size, whichever is greater. (Exception: Heat pumps may exceed the design load by 1.25 times or the next nominal size.)
- Manual S.** Specified heating equipment capacity shall be ≤ 1.40 times the design load or the next larger nominal size, whichever is greater
- N1103.6** Whole-house mechanical ventilation worksheet has been completed (see reverse)

HVAC EQUIPMENT DESIGN FORM

WHOLE-HOUSE MECHANICAL VENTILATION DESIGN WORKSHEET

1. Fill in the conditioned floor area and number of bedrooms for the dwelling:

Conditioned Floor Area = _____ ft² Number of bedrooms = _____

2. Circle the required airflow value on the table below or use Equation 15-1:

➤ Equation 15-1:

$(0.01.1 \times \text{total sq.ft. area of house}) + [7.5 \times (\text{number of bedrooms} + 1)] = \text{Ventilation rate (cu.ft./minute)}$

$(0.01 \times \text{_____ sq.ft.}) + [7.5 \times (\text{_____} + 1)] = \text{_____ cu.ft./minute}$

IRC Table M M1505.4.3(1)

Continuous Whole-House Mechanical Ventilation System Airflow Rate Requirements

Dwelling Unit Floor Area (square feet)	Number of Bedrooms				
	0-1	2-3	4-5	6-7	>7
	Airflow in CFM				
< 1,500	30	45	60	75	90
1,501 – 3,000	45	60	75	90	105
3,001 – 4,500	60	75	90	105	120
4,501 – 6,000	75	90	105	120	135
6,001 – 7,500	90	105	120	135	150
> 7,500	105	120	135	150	165

3. Will the fan operate continuously or intermittently? Continuous Intermittent

4. If the fan will be operated intermittently, multiply the airflow value from Table M 1505.4.3(1) (above) by the appropriate value in Table M)1505.4.3(2) (below). Note: the fan must operate *on a pre-set schedule*.

IRC Table M 1505.4.3(2)

Intermittent Whole-House Mechanical Ventilation Rate Factors

Run-time Percentage in Each 4-hour Segment	25%	33%	50%	66%	75%	100%
Factor	4.0	3.0	2.0	1.5	1.3	1.0

5. Enter the required airflow = _____ CFM

- The fan's rated are flow rate shall meet or exceed the value in **Item 5**
- The fan's rated efficacy shall meet or exceed the appropriate value below:
- Bathroom/utility room fans 90 cfm or greater, in-line fans, and range hoods: **2.8 cfm/watt**
 - Bathroom/utility room fans 10 cfm or greater and less than 90 cfm: **1.4 cfm/watt**
 - HRV or ERV fans: **1.2 cfm/watt**

Design Professional / Mechanical Contractor Name: _____

Design Professional / Mechanical Contractor Signature: _____ Date: _____