

## 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:

- R403.1.1** Thermostats shall be programmable
- R403.3.1** Ducts in unconditioned spaces  $\geq 3''$  diameter shall be insulated to  $\geq R-8$  in attics and  $\geq R-6$  elsewhere
- R403.3.1** Ducts in unconditioned spaces  $< 3''$  diameter shall be insulated to  $\geq R-6$  in attics and  $\geq R-4.2$  elsewhere
- R403.2.2.1** Air handler shall have a manufacturer's designation of  $\leq 2\%$  air leakage when tested per ASHRAE 193
- R403.3.3** The *Duct and Envelope Testing* form shall be completed and submitted to the inspector
- R403.4** HVAC pipe insulation is R-3 minimum (e.g. hydronic systems, refrigerant lines) and outdoor insulation is protected
- R403.7** Manual J report, including heating and cooling design loads, shall be submitted to the inspector
- R403.7** 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  $\leq 1.15$  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  $\leq 1.40$  times the design load or the next larger nominal size, whichever is greater
- R303.4** Whole-house mechanical ventilation worksheet has been completed (see reverse)

## HVAC EQUIPMENT DESIGN FORM

Address: \_\_\_\_\_ Permit #: \_\_\_\_\_ Date: \_\_\_\_\_

Permit holder: \_\_\_\_\_ Phone: \_\_\_\_\_

### WHOLE-HOUSE MECHANICAL VENTILATION DESIGN WORKSHEET

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

Conditioned Floor Area = \_\_\_\_\_ ft<sup>2</sup>                      Number of bedrooms = \_\_\_\_\_

**2. Circle the required airflow value on the table below:**

#### IRC Table M1507.3.3(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 M1507.3.3 (above) by the appropriate value in Table M1507.3.3(2) (below). Note: the fan must operate *on a pre-set schedule*.

#### IRC Table M1507.3.3(2)

#### Intermittent Whole-House Mechanical Ventilation Rate Factors

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

**5. Enter the required airflow = \_\_\_\_\_ CFM**

The fan's rated airflow 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**