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 ≥ 3” diameter shall be insulated to ≥ R-8 in attics and ≥ R-6 elsewhere

☐ R403.3.1 Ducts in unconditioned spaces < 3” diameter shall be insulated to ≥ R-6 in attics and ≥ R-4.2 elsewhere

☐ R403.2.2.1 Air handler shall have a manufacturer’s designation of ≤ 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 ≤ 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

☐ R303.4 Whole-house mechanical ventilation worksheet has been completed (see reverse)
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:

   IRC Table M1507.3.3(1)  
   Continuous Whole-House Mechanical Ventilation System Airflow Rate Requirements

<table>
<thead>
<tr>
<th>Dwelling Unit Floor Area (square feet)</th>
<th>Number of Bedrooms</th>
<th>0-1</th>
<th>2-3</th>
<th>4-5</th>
<th>6-7</th>
<th>&gt;7</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1,500</td>
<td>30</td>
<td>45</td>
<td>60</td>
<td>75</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>1,501 – 3,000</td>
<td>45</td>
<td>60</td>
<td>75</td>
<td>90</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>3,001 – 4,500</td>
<td>60</td>
<td>75</td>
<td>90</td>
<td>105</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>4,501 – 6,000</td>
<td>75</td>
<td>90</td>
<td>105</td>
<td>120</td>
<td>135</td>
<td></td>
</tr>
<tr>
<td>6,001 – 7,500</td>
<td>90</td>
<td>105</td>
<td>120</td>
<td>135</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>&gt; 7,500</td>
<td>105</td>
<td>120</td>
<td>135</td>
<td>150</td>
<td>165</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Run-time Percentage in Each 4-hour Segment</th>
<th>25%</th>
<th>33%</th>
<th>50%</th>
<th>66%</th>
<th>75%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor</td>
<td>4.0</td>
<td>3.0</td>
<td>2.0</td>
<td>1.5</td>
<td>1.3</td>
</tr>
</tbody>
</table>

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