



DIVISION OF BUILDING SAFETY

Residential Energy Submittal Worksheet (2009 WSEC)

Name: _____ Date: _____

PLEASE COMPLETE THE FOLLOWING:

| | |
|---|---|
| <p>GLAZING AREA CALCULATION: _____ Window Area Sq. Ft. ÷ _____ Heated Floor Area Sq. Ft. = _____ Percentage of Glazing</p> <p>Refer to table below to determine compliance path</p> | <p>NOTE: Heating and cooling design loads, including infiltration, are required for sizing HVAC systems and shall be calculated in accordance with accepted engineering practices. WSEC 503.2.1. For a spreadsheet go to: http://www.energy.wsu.edu/BuildingEfficiency/EnergyCode.aspx</p> |
|---|---|

| | | | |
|--|---|--|--|
| <p>JOB TYPE: <input type="checkbox"/> New <input type="checkbox"/> Remodel <input type="checkbox"/> Addition</p> | <p>OCCUPANCY: <input type="checkbox"/> Single Family <input type="checkbox"/> Multi-family</p> | <p>COMPLIANCE PATH: <input type="checkbox"/> Ch. 4 - System Analysis (Attached) <input type="checkbox"/> Ch. 5 - Component Performance (Attached) <input type="checkbox"/> Ch. 6 - Prescriptive (check one) <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> III</p> | <p>HEAT SYSTEM SIZE: (Attach Heat Loss Calcs.) <input type="checkbox"/> Btu Input: _____ Efficiency Rating: _____ % <input type="checkbox"/> WATTS: _____ HSPF rating: _____</p> |
| <p>FUEL TYPE: <input type="checkbox"/> Electric <input type="checkbox"/> Other (gas, wood, oil, propane)</p> | <p>HEAT TYPE: <input type="checkbox"/> Forced Air Furnace <input type="checkbox"/> Heat Pump <input type="checkbox"/> Radiant Heat System (baseboard, wall cadet) <input type="checkbox"/> Hydronics system <input type="checkbox"/> Gas or Wood Stove (Outside of Urban Growth Area)</p> | <p>ELEC. UTILITY PROVIDER: <input type="checkbox"/> Tacoma Power <input type="checkbox"/> Puget Sound Energy <input type="checkbox"/> Lakeview <input type="checkbox"/> Other _____</p> | |

**TABLE 6-1
 PRESCRIPTIVE REQUIREMENTS_{0,1} FOR GROUP R OCCUPANCY
 CLIMATE ZONE 1**

| Option | Glazing Area ¹⁰ : % of Floor | Glazing U Factor Vertical | Glazing U Factor Overhead ¹¹ | Door ⁹ U Value | Ceiling ² | Vaulted Ceiling ³ | Wall ¹² Above Grade | Wall • int ⁴ Below Grade | Wall Ext ⁴ Below Grade | Floor ⁵ | Slab ⁶ on Grade |
|-------------|--|------------------------------|--|------------------------------|------------------------|------------------------------|-----------------------------------|---|---|-----------------------|-------------------------------|
| I. | 13% | 0.34 | 0.50 | 0.20 | R-49 or R-38 adv | R-38 | R-21 int ⁷ | R-21 TB | R-10 | R-30 | R-10 2' |
| II.* | 25% | 0.32 | 0.50 | 0.20 | R-49 or R-38 adv | R-38 | R-21 int ⁷ | R-21 TB | R-10 | R-30 | R-10 2' |
| III. | Unlimited | 0.30 | 0.50 | 0.20 | R-49 or R-38 adv | R-38 | R-21 int ⁷ | R-21 TB | R-10 | R-30 / U=0.02 9 | R-10 2' |

* Reference Case
 See last page for footnote reference(s).

Additional Energy Efficiency Requirements

Option(s) from WSEC Table 9-1 that provide at least 1.0 credit.

Option: _____ Credit Value: _____ Option: _____ Credit Value: _____

Option: _____ Credit Value: _____ Option: _____ Credit Value: _____

Total Credits: _____

2009 IRC WHOLE HOUSE VENTILATION INFORMATION

Whole House Ventilation System (check one)

Option 1 - **IRC M1508.4** Whole House Venting Using Exhaust Fans

Option 2 - **IRC M1508.5** Whole House Ventilation Integrated With Central Heating

Option 3 - **IRC M1508.6** Whole House Ventilation Ducted From Supply Fan

Option 4 - **IRC M1508.7** Whole House Ventilation Heat Recovery Ventilation System

Whole House Ventilation Rate: _____ cfm. From Table M1508.2 for Options 1, 3&4.

Calculated per Section M1508.3 for Option 2.

Key Requirements of Each System:

IRC M1508.4 - Intermittent Whole House Venting Using Exhaust Fans

- Whole house fans located 4 feet or less from the interior grill shall have a sone rating of 1.0 or less.
- All exhaust ducts shall terminate outside the building.
- Outdoor air shall be distributed to each habitable room.

IRC M1508.5 – Intermittent Whole House Ventilation Integrated With a Forced Air System

- Shall provide outdoor air at the rate calculated using Section M1508.3
- Shall distribute outdoor air to each habitable room through the forced-air system ducts.
- Outdoor inlet duct shall enter from a terminal element on the outside of the building and connect to the return air plenum.
- Outdoor inlet duct shall connect upstream of the blower.
- The system shall be equipped with a motorized damper connected to the automatic ventilation control.
- Flow rate shall be field-tested.

IRC1508.6 – Intermittent Whole House Ventilation Using a Supply Fan

- Supply fan shall distribute outdoor air to each habitable room through the forced-air system ducts or through dedicated ducts to each habitable room.
- The outdoor shall be filtered before it is delivered.
- An outdoor inlet shall be connected to either the supply or return air system.
- System shall have a back-draft damper and properly calibrated.

IRC 1508.7 – Intermittent Whole House Ventilation Using a Heat Recovery Ventilation System

- All ductwork shall be sized and installed per manufacturer's specs.
- Must meet flow ratings per M1508.2 and have filter on the upstream side.
- Outdoor inlets shall be screened and properly located.
- All supply ducts in the conditioned space upstream of the heat exchanger shall be insulated to R-4.

All Systems - The whole house ventilation fan shall be controlled by a 24-hour clock timer with the capability of continuous operation, manual and automatic control. Set to operate 8 hours a day & labeled.

Note: The above notes are excerpts from the code. For complete details, you must refer to the code sections for total compliance.

**Table M1507.3
MINIMUM REQUIRED EXHAUST RATES FOR
ONE- AND TWO-FAMILY DWELLINGS**

| AREA TO BE VENTILATED | VENTILATION RATES |
|--------------------------|---|
| Kitchens | 100 cfm intermediate or 25 cfm continuous |
| Bathrooms – Toilet Rooms | Mechanical exhaust capacity of 50 cfm intermittent or 20 cfm continuous |

**Table M1508.2
MINIMUM VENTILATION RATES
(Continuously Operating Systems)**

| Floor Area Bedrooms ¹ (ft ²) | # of Bedrooms | | | | |
|---|---------------|-----|-----|-----|-----|
| | 0-1 | 2-3 | 4-5 | 6-7 | >7 |
| <1500 | 30 | 45 | 50 | 75 | 90 |
| 1501 – 3000 | 45 | 60 | 75 | 90 | 105 |
| 3001 – 4500 | 60 | 75 | 90 | 105 | 120 |
| 4501 – 6000 | 75 | 90 | 105 | 120 | 135 |
| 6001 – 7500 | 90 | 105 | 120 | 135 | 150 |
| >7500 | 105 | 120 | 135 | 150 | 165 |

¹ Ventilation rates in table are minimum outdoor airflow rates measured in cfm.

Footnotes from Table 6-1 on Front Page

0. Nominal R-values are for wood frame assemblies only or assemblies built in accordance with Section 601.1.

1. Minimum requirements for each option listed. For example, if a proposed design has a glazing ratio to the conditioned floor area of 15%, it shall comply with all of the requirements of the 25% glazing option (or higher). Proposed designs which cannot meet the specific requirements of a listed option above may calculate compliance by Chapters 4 or 5 of this Code.

2. Requirement applies to all ceilings except single rafter or joist vaulted ceilings complying with note 3. 'Adv' denotes Advanced Framed Ceiling.

3. Requirement applicable only to single rafter or joist vaulted ceilings.

4. Below grade walls shall be insulated either on the exterior to a minimum level of R-10 continuous, or on the interior as a framed wall. Exterior insulation installed on below grade walls shall be a water resistant material, manufactured for its intended use, and installed according to the manufacturer's specifications. See Section 602.2.

5. Floors over crawl spaces or exposed to ambient air conditions.

6. Required slab perimeter insulation shall be a water resistant material, manufactured for its intended use, and installed according to manufacturer's specifications. See Section 602.4. For slabs inside a foundation wall, the insulation shall be installed to provide a thermal break (TB) between the slab edge and the foundation. Monolithic slabs shall include insulation, installed outside the foundation wall, and shall extend downward from the top of the slab for a minimum distance of 24 inches or downward and then horizontally for a minimum combined distance of 24 inches. Monolithic slabs shall also include R-10 insulation under the non-load-bearing portions of the slab.

7. Int. denotes standard framing 16 inches on center with headers insulated with a minimum of R-10 insulation.

8. Reserved.

9. Doors, including all fire doors, shall be assigned default U-factors from Table 10-6C.

10. Where a maximum glazing area is listed, the total glazing area (combined vertical plus overhead) as a percent of gross conditioned floor area shall be less than or equal to that value. Overhead glazing with U-factor of U=0.35 or less is not included in glazing area limitations.

11. Overhead glazing shall have U-factors determined in accordance with NFRC 100 or as specified in Section 502.1.5.

12. Log and solid timber walls with a minimum average thickness of 3.5" are exempt from this insulation requirement.