DIVISION OF BUILDING SAFETY AND INSPECTION

Residential Energy Submittal Worksheet

2009 Washington State Energy Code
2009 IRC – Whole House Ventilation

Name: _____ Application No.: _____ Date: _____

PLEASE COMPLETE THE FOLLOWING:

GLAZING AREA CALCULATION:

_____ Window Area Sq. Ft.

÷ _____ Heated Floor Area Sq. Ft.

= _____ Percentage of Glazing

Refer to table below to determine compliance path

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**

JOB TYPE:
[ ] New
[ ] Remodel
[ ] Addition

OCCUPANCY:
[ ] Single Family
[ ] Multi-family

COMPLIANCE PATH:
[ ] Ch. 4 - System Analysis (Attached)
[ ] Ch. 5 - Component Performance (Attached)
[ ] Ch. 6 - Prescriptive (check one)
[ ] I [ ] II [ ] III

HEAT SYSTEM SIZE:
(Attach Heat Loss Calcs.)
[ ] Btu Input: _____
Efficiency Rating: _____%
[ ] WATTS: _____
HSPF rating: _____

FUEL TYPE:
[ ] Electric
[ ] Other (gas, wood, oil, propane)

HEAT TYPE:
[ ] Forced Air Furnace
[ ] Heat Pump
[ ] Radiant Heat System (baseboard, wall cadet)
[ ] Hydronics system
[ ] Gas or Wood Stove (Outside of Urban Growth Area)

ELEC. UTILITY PROVIDER:
[ ] Tacoma Power
[ ] Puget Sound Energy
[ ] Peninsula Power
[ ] Other
_____

TABLE 6-1
PRESCRIPTIVE REQUIREMENTS[0,1] FOR GROUP R OCCUPANCY
CLIMATE ZONE 1

Option	Glazing Area [10]: % of Floor	Glazing U-Factor		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
		Vertical	Overhead[11]								
I.	13%	0.34	0.50	0.20	R-49 or R-38 adv	R-38	R-21 int7	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 int7	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 int7	R-21 TB	R-10	R-30 / U=0.029	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 (ft^2)	Bedrooms[1]				
	0-1	2-3	4-5	6-7	>7
<1500	30	45	60	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.