STATE OF WASHINGTON

STATE BUILDING CODE COUNCIL

May 2018

Log No. _IMC32 Proponent Revision 2

5-10-19

1. State Building Code to be Amended:

- ☐ International Building Code
- ☐ ICC ANSI A117.1 Accessibility Code
- ☐ International Existing Building Code
- ☐ International Residential Code
- ☐ International Fire Code
- ☐ Uniform Plumbing Code
- X International Mechanical Code
- ☐ International Fuel Gas Code
- ☐ NFPA 54 National Fuel Gas Code
- ☐ NFPA 58 Liquefied Petroleum Gas Code
- ☐ Wildland Urban Interface Code

For the Washington State Energy Code, please see specialized energy code forms

Section(s): 403.8
(e.g.: Section: R403.2)

Title: Ventilation systems for residential ~~occupnacies~~occupancies
(e.g: Footings for wood foundations)

2. Proponent Name (Specific local government, organization or individual):

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4. **Proposed Code Amendment**. Reproduce the section to be amended by underlining all added language, striking through all deleted language. Insert new sections in the appropriate place in the code in order to continue the established numbering system of the code. If more than one section is proposed for amendment or more than one page is needed for reproducing the affected section of the code additional pages may be attached. (Examples on the SBCC website)

Code(s) WA-IMC **Section(s)** 403.8

Additions to Chapter 2, Section 202 General Definitions

Balanced Ventilation. Any combination of concurrently operating mechanical exhaust and mechanical supply whereby the total mechanical exhaust airflow rate is within 10% of the total mechanical supply airflow rate.

Distributed Ventilation System. A whole house ventilation system shall be considered distributed when it supplies ventilation air directly (not transfer air) to each common area and bedroom, and/or exhausts air directly to outdoors from all kitchens and bathrooms.

~~**Mixed Ventilation Zone.** A whole house ventilation system shall be considered *mixed* if a circulation system recirculates at least 50% of the dwelling air volume each hour.~~

~~**403.8 Ventilation systems for Group R occupancies.** Each dwelling unit or sleeping unit shall be equipped with local exhaust and whole house ventilation systems and shall comply with Sections 403.8.1 through 403.8.11. All occupied spaces, including public corridors, other than the Group R dwelling and sleeping unit, that support the Group R occupancy shall meet the ventilation requirements of Section 402 or Sections 403.1 to 403.7.~~

~~**403.8.1 Minimum ventilation performance.** Ventilation systems shall be designed and installed to satisfy the ventilation requirements of Table 403.3.1.1 or Table 403.8.1. Breathing zone ventilation rates from Table 403.3.1.1 shall be calculated per Section 403.3.1.1 and corrected per zone air distribution effectiveness requirements per Section 403.3.1.2.~~

~~**TABLE 403.8.1 VENTILATION RATES FOR ALL GROUP R PRIVATE DWELLINGS, SINGLE AND MULTIPLE (Continuously Operating Systems)**~~

~~Floor Area (ft^2)~~	~~Bedrooms[a]~~				
	~~0-1~~	~~2-3~~	~~4-5~~	~~6-7~~	~~>7~~
~~<500~~	~~30~~	~~40~~	~~45~~	~~55~~	~~60~~
~~500—1000~~	~~45~~	~~55~~	~~60~~	~~70~~	~~75~~
~~1001—1500~~	~~60~~	~~70~~	~~75~~	~~85~~	~~90~~
~~1501—2000~~	~~75~~	~~85~~	~~90~~	~~100~~	~~105~~
~~2001—2500~~	~~90~~	~~100~~	~~105~~	~~115~~	~~120~~
~~2501—3000~~	~~105~~	~~115~~	~~120~~	~~130~~	~~135~~
~~3001—3500~~	~~120~~	~~130~~	~~135~~	~~145~~	~~150~~
~~>3500~~	~~135~~	~~145~~	~~150~~	~~160~~	~~165~~

~~a. Ventilation rates in table are minimum outdoor airflow rates measured in cfm.~~

~~**403.8.2 Control and operation.**~~

~~1. Location of controls. Controls for all ventilation systems shall be readily accessible by the occupant.~~

~~2. Instructions. Operating instructions for whole house ventilation systems shall be provided to the occupant by the installer of the system.~~

~~3. Local ventilation systems. Local ventilation systems shall be controlled by manual switches,~~

dehumidistats, timers, or other approved means.

4. Continuous whole house ventilation systems. Continuous whole house ventilation systems shall operate continuously and be equipped with an override control. A “fan on”switch shall be permitted as an override control. Controls shall be capable of operating the ventilation system without energizing other energy- consuming appliances. A clearly visible label shall be affixed to the controls that reads "Whole House Ventilation (see operating instructions)."

5. Intermittent whole house ventilation systems. Intermittent whole house ventilation systems shall comply with the following:

5.1 They shall be capable of operating intermittently and continuously.

5.2 They shall have controls capable of operating the exhaust fans, forced-air system fans, or supply fans without energizing other energy-consuming appliances.

5.3 The ventilation rate shall be adjusted according to the exception in Section 403.8.5.1.

5.4 The system shall be designed so that it can operate automatically based on the type of control timer installed.

5.5 The intermittent mechanical ventilation system shall operate at least one hour out of every four.

5.6 The system shall have a manual control and automatic control, such as a 24-hour clock timer.

5.7 At the time of final inspection, the automatic control shall be set to operate the whole house fan according to the schedule used to calculate the whole house fan sizing.

5.8 A label shall be affixed to the control that reads "Whole House Ventilation (see operating instructions)."

Exception: Engineered central ventilation systems serving dwelling units or sleeping units are not required to have individual controls for each dwelling unit or sleeping unit when designed for continuous operation and approved by the code official.

403.8.3 Outdoor air intake locations. Outdoor air intakes shall be classified as either operable openings or mechanical air intakes and shall be located per the following criteria. The intake locations for operable openings and mechanical air intakes shall comply with the following:

1. Openings for mechanical air intakes shall comply with Section 401.4. Operable openings shall comply with Section 401.4 items 2 and 4 only.
2. Intake openings shall not be located closer than 10 feet from an appliance vent outlet unless such vent outlet is 3 feet above the outdoor air inlet. The vent shall be permitted to be closer if specifically allowed by Chapter 8 or by the International Fuel Gas Code.
3. Intake openings shall be located where they will not pick up objectionable odors, fumes, or flammable vapors.
4. Intake openings shall be located where they will not take air from a hazardous or unsanitary location.
5. Intake openings shall be located where they will not take air from a room or space having a fuel-burning appliance.
6. Intake openings shall not be located closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.
7. Intake openings shall not be located where they will take air from an attic, crawl space, or garage.
8. Intake openings shall not be located on asphalt roofs unless it is shown that no other locationis permissible. In such cased, the inlet opening shall be located a minimum of 2 feet from the nearest surface of the asphalt roofing, measured from the intake opening.

403.8.4 Local ventilation requirements. Local exhaust ventilation systems shall exhaust at least the volume of air required for exhaust in Table 403.3.1.1. Exhaust shall be provided in each kitchen, bathroom, water closet, laundry area, indoor swimming pool, spa, and other room where water vapor or cooking odor

~~is produced.~~

~~403.8.4.1 **Local exhaust systems.** Exhaust systems shall be designed and installed to meet all of the criteria below:~~

1. ~~Local exhaust shall be discharged outdoors.~~
2. ~~Exhaust outlets shall comply with Section 501.3.~~
3. ~~Pressure equalization shall comply with Section 501.4.~~
4. ~~Exhaust ducts in systems which are designed to operate intermittently shall be equipped with back-draft dampers.~~
5. ~~All exhaust ducts in unconditioned spaces shall be insulated to a minimum of R-4.~~
6. ~~Terminal outlet elements shall have at least the equivalent net free area of the ductwork.~~
7. ~~Terminal outlet elements shall be screened or otherwise protected as required by Section 501.3.2. Exhaust fans in separate dwelling units or sleeping units shall not share common exhaust ducts unless the system is engineered for this operation. Where permitted by Chapter 5, multiple local exhaust ducts may be combined. If more than one of the exhaust fans in a dwelling unit or sleeping unit shares a common exhaust duct then each exhaust fan shall be equipped with a back-draft damper to prevent the recirculation of exhaust air from one room to another room via the exhaust ducting system.~~

403.8 Whole-house mechanical ventilation system, R-2 and R-3 occupancies. Each dwelling unit or sleeping unit shall be equipped with a whole-house mechanical ventilation system complying with Sections 403.8.1 through 403.8.6. Each dwelling unit or sleeping unit shall be equipped with local exhaust complying with Section 403.8.6. Where a dwelling unit shares demising walls, floors, ceilings, or common corridors with another dwelling unit it shall be considered an attached dwelling unit and shall be ventilated in accordance with section 403.8.4.2. All occupied spaces, including public corridors, other than the Group R-2 and R-3 dwelling units and/or sleeping units, that support these Group R ~~occupancy~~ occupancies shall meet the ventilation requirements of Section 402 and Sections 403.1 to 403.7.

403.8.1 System design. The whole-house ventilation system shall consist of one or more supply or exhaust fans, or a combination of such, and associated ducts and controls. Local exhaust or supply fans are permitted to serve as such a system.

403.8.2 Mechanical ventilation rate. The whole-house mechanical ventilation system shall provide outdoor air at an average rate not less than that determined by Equation 4-9 or Table 403.8.1. Ventilation systems for sleeping units shall use Equation 4-9 only.

$Q_r = 0.01*A_{floor} + 7.5*(N_{br} + 1)$ **(Equation 4-9)**

where:

Q_r = ventilation airflow rate, cubic feet per minute (cfm)

A_{floor} = Conditioned floor area, square feet (ft^2)

N_{br} = number of bedrooms, not less than one.

TABLE 403.8.1
WHOLE-HOUSE MECHANICAL VENTILATION AIRFLOW RATE

DWELLING UNIT FLOOR AREA (square feet)	NUMBER OF BEDROOMS				
	1	2	3	4	5
	Airflow in CFM[a]				
≤ 500	30	30	35	45	50
501 – 1,000	30	35	40	50	55

1,001-1,500	30	40	45	55	60
1,501 – 2,000	35	45	50	60	65
2,001 – 2,500	40	50	55	65	70
2,501 – 3,000	45	55	60	70	75
3,001 – 3,500	50	60	65	75	80
3,501 – 4,000	55	65	70	80	85
4,001 – 4,500	60	70	75	85	90
4,501 – 5,000	65	75	80	90	95

a. Minimum airflow (Q_r) is set at 30 CFM for all dwelling units.

403.8.3 Ventilation quality adjustment. The minimum whole-house ventilation rate from Section 403.8.7 shall be adjusted by the system coefficient in Table 403.8.2 based on the system type.

$Q_v = Q_r * C_{system}$ - **(Equation 4-10)**

where:

Q_v = quality-adjusted ventilation airflow rate in cubic feet per minute (cfm)

Q_r = ventilation airflow rate, cubic feet per minute (cfm) from Equation 4-9 or Table 403.8.1

C_{system} = system coefficient from Table 403.8.2

TABLE 403.8.2
SYSTEM COEFFICIENT (C_{system})

System Type	Distributed	Not distributed
Balanced	1.0	1.25
Not balanced	1.25	1.5

403.8.4 Ventilation residential occupancies: Ventilation systems shall meet the requirements of this section. Sizing and distribution shall be in accordance with sections 403.8.7 and 403.8.8. Ventilation systems serving dwelling units or sleeping units are not required to have individual controls for each dwelling unit or sleeping unit when designed for continuous operation and approved by the code official.

403.8.4.1. Ventilation for dwelling and sleeping units in R-2 occupancies: The mechanical ventilation system shall be a balanced system sized in accordance with Equation 4-9. Balanced systems shall have a sensible heat recovery capability as prescribed in section C402.5.1.2 of the WSEC. ~~The ventilation system shall operate continuously.~~

403.8.4.2. Other attached dwelling units: The dwelling unit mechanical ventilation system shall be a sized in accordance with Section 403.8.2 without adjustments. Such systems shall operate continuously at this rate.

403.8.4.3. Detached dwelling units[1]. The dwelling unit mechanical ventilation system shall be a sized in accordance with Section 403.8.2 and 403.8.3. The system shall be controlled in accordance with Section 403.8.6.

403.8.5 System controls:

1) The whole house ventilation system shall be controlled with timers or other means that provide for automatic operation of the ventilation system;
2) The whole-house mechanical ventilation system shall be provided with controls that enable manual override except as provided in section 403.8.4;
3) Whole house ventilation systems shall be capable of operating continuously except as provided in Section in 403.8.6.5.

403.8.6 System Component Requirements. Ventilation fans specified in this section shall have a minimum efficacy of ~~.65 Watts/cfm~~2.8 cfm/watt (.35 w/cfm) and shall be rated for sound at a maximum of 1.0 sone.

403.8.6.1. Exhaust Fans: Exhaust fans required shall be ducted directly to the outside. Exhaust fans shall

[1] For detached dwelling units only, ASHRAE Standard 62.2 may be used to show compliance with this standard.

be tested and rated in accordance with the airflow and sound rating procedures of the Home Ventilating Institute (HVI 915, HVI Loudness Testing and Rating Procedure, HVI 916, HVI Airflow Test Procedure, and HVI 920, HVI Product Performance Certification Procedure). Exhaust fans required in this section may be used to provide local ventilation. Such fans ~~will~~ shall be provide occupant controlled high speed operation to meet the requirements of Section 403.8.7. The flow rate test results shall be submitted and posted in accordance with section 403.8.6.6.

403.8.6.2 Supply Fans. Supply fans used in meeting the requirements of this section shall draw outside air in accordance with section 403.3. Supply fans shall be tested and rated in accordance with the airflow and sound rating procedures of the Home Ventilating Institute (HVI 915, HVI Loudness Testing and Rating Procedure, HVI 916, HVI Airflow Test Procedure, and HVI 920, HVI Product Performance Certification Procedure). Where outdoor air is provided to each habitable dwelling unit or sleeping unit by supply fan systems the outdoor air shall be filtered. The filter shall be accessible for regular maintenance and replacement. The filter shall have a Minimum Efficiency Rating Value (MERV) of at least ~~13~~8.

403.8.6.3 Furnace Integrated Supply. Systems using space condition air handler fans for supply air distribution are not permitted.

Exception: Air handler fans which have multi-speed capacity where the low speed is not greater than 25% of the rated air flow capacity. The low speed shall be used for ventilation or a variable speed capacity that can be set to comply with the requirements of this section may be used. ~~To allowed~~A ~~a~~ir intake must meet the provisions of section 403 and that air intake must include a motorized damper that is activated by the ventilation system controller. The flow rate for the air intake must be verified at the ventilation fan speed and the results of the test shall be submitted and posted in accordance with section 403.8.6.6.

403.8.6.4 Balanced Ventilation System. A balanced ventilation system shall include both a supply fan and an exhaust fan. The supply and exhaust fans shall have airflow that is within 10% of each other. The operational flow rate of both supply and exhaust fans shall be tested. The flow rate test results shall be submitted and posted in accordance with section 403.8.6.6. The exhaust fan shall meet the requirements of section 403.8.6.1. The supply fan shall meet the requirements of section 403.8.6.2.

403.8.6.5 Outdoor air intakes. Outdoor air intakes shall be classified as either operable openings or mechanical air intakes shall be designed per the following criteria:

1. Intakes or exhaust shall be designed to limit the pressure difference to the outside to .04 in.w.g (10pa)
2. ~~2.~~ Openings for mechanical air intakes shall comply with Section 401.4. Operable openings shall comply with Section 401.4 items 2 and 4 only.
3. ~~3.~~ Intake openings shall be located where they will not take air from a hazardous or unsanitary location or pick up objectionable odors, fumes, or flammable vapors.
4. Intake openings shall not be located where they will take air from an attic, crawl space, or garage.

403.8.6.~~5~~ 6 Intermittent operation. Systems controlled to operate intermittently shall operate for a least two hours in each four occupied hours. The ventilation airflow rate shall be computed as the average rate including both times of operation and non-operation. Fans installed in accordance with this section shall be sized using equation 4-10 as modified in this section.

403.8.6.~~6~~7. Testing. Whole-house mechanical ventilation systems shall be tested and verified to provide a flow rate not less than the minimum required by Section 403.8.2 and 403.8.3. Testing shall be performed according to the ventilation equipment manufacturer's instructions, or by using a flow hood, flow grid, or other airflow measuring device at the mechanical ventilation fan's inlet terminals, outlet terminals or grilles or in the connected ventilation ducts. Where required by the building official, testing shall be conducted by an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the building official~~.~~ and be posted in the dwelling.

~~403.8.4~~ 403.8.7 Local exhaust. Bathrooms, toilet rooms, and kitchens shall include a local exhaust system. Such local exhaust systems shall have the capacity to exhaust the minimum airflow rate in accordance with Table 403.8.3 and Table 403.3.1.1 (including notes). Fans required by this section shall be provided with

controls that enable manual override. An "on/off" switch shall meet this requirement. Fan controls shall be readily accessible in the room served by the fan.

403.8.7.1 Whole house exhaust controls. If the local exhaust fan is included in an exhaust only ventilation system, in accordance with section 403.8.6, then the exhaust fan shall be controlled to operate as specified in section 403.8.5

TABLE 403.8.3
MINIMUM LOCAL EXHAUST RATES

AREA TO BE EXHAUSTED	EXHAUST RATES	
	Intermittent	Continuous
Kitchens	150 cfm	~~50~~ 30 cfm
Bathrooms-Toilet Rooms	50 cfm	20 cfm

~~**403.8.4.2**~~ **403.8.7.2 Local exhaust fans.** Exhaust fan shall meet the following criteria.

1. Exhaust fans shall be tested and rated in accordance with the airflow and sound rating procedures of the Home Ventilating Institute (HVI 915, HVI Loudness Testing and Rating Procedure, HVI 916, HVI Airflow Test Procedure, and HVI 920, HVI Product Performance Certification Procedure).
2. Fan airflow rating and duct system shall be designed and installed to deliver at least the exhaust airflow required by Table 403.8.3. The airflows required refer to the delivered airflow of the system as installed and tested using a flow hood, flow grid, or other airflow measurement device.
3. Design and installation of the system or equipment shall be carried out in accordance with manufacturers' installation instructions.
4. Fan airflow rating and duct system shall be designed and installed to deliver at least the exhaust airflow required by Table 403.3.1.1. The airflows required refer to the delivered airflow of the system as installed and tested using a flow hood, flow grid, or other airflow measurement device.

Exceptions:

1. An exhaust airflow rating at a pressure of 0.25 in.w.g. may be used, provided the duct sizing meets the prescriptive requirements of Table 403.8.4.2.
2. Where a range hood or down draft exhaust fan is used to satisfy the local ventilation requirements for kitchens, the range hood or down draft exhaust shall not be less than 100 cfm at 0.10 in. w.g.

TABLE 403.8.4.2
PRESCRIPTIVE EXHAUST DUCT SIZING

Fan Tested cfm at 0.25 inches w.g.	Minimum Flex Diameter	Maximum Length in Feet	Minimum Smooth Diameter	Maximum Length in Feet	Maximum Elbows[a]
50	4 inches	25	4 inches	70	3
50	5 inches	90	5 inches	100	3
50	6 inches	No Limit	6 inches	No Limit	3
80	4 inches[b]	NA	4 inches	20	3
80	5 inches	15	5 inches	100	3
80	6 inches	90	6 inches	No Limit	3
100	5 inches[b]	NA	5 inches	50	3
100	6 inches	45	6 inches	No Limit	3
125	6 inches	15	6 inches	No Limit	3
125	7 inches	70	7 inches	No Limit	3

a. For each additional elbow, subtract 10 feet from length.
b. Flex ducts of this diameter are not permitted with fans of this size

5. **Briefly explain your proposed amendment, including the purpose, benefits and problems addressed.** Specifically note any impacts or benefits to business, and specify construction types, industries and services that would be affected. Finally, please note any potential impact on enforcement such as special reporting requirements or additional inspections required.

The code proposal is aimed at the residential occupancies that are covered in the IMC. The Washington State IMC has a unique feature of a specific section that specifies requirements for the ventilation system in residences separate from the table 403.3.1 requirements. This section has been constructed over time and includes the old VIAQ code that was part of the Washington code package since 1991. In 2015 the requirements were expanded using language from the IRC and language from the ASHRAE Standard 62.2-2016. As these disparate codes were merged, inconsistencies IMC resulted in contradictory requirements with the IRC and with the previous versions of the VIAQ. Specifically, the central table (from Standard 62.2) has resulted in a increase in the ventilation requirements without the attending offsets in that standard. The IRC remains at the previous level that was drawn from ASHRAE 62.2-2010. This combination of standards has led to a confusing set of requirements that demand high air flows without any guidance on the types of systems and the types of designs.

The proposed amendment removes the bulk of section 403.8 and replaces with a simplified (and enforceable) standard that is based on two tables. The first table (403.8.1) expands the IRC table and provides a more granular set of standards. In additions the table set a minimum ventilation rate of 30 CFM regardless of dwelling size. The second table provides design guidance (table 403.8.2) that is meant to increase ventilation flow when the system installed is providing only point source ventilation and relying on convection or other incidental mixing to distribute the ventilation air. These two tables together result in a ventilation flow similar to the existing standard if an exhaust only system is installed.

The second major change is a requirement for balanced flow ventilation in multi-family dwelling units. The impetus for this change is the observation from the Department of Health that cross contamination (odors, smoke, cooking fumes) between units are the leading cause of complaints to the DOH from multifamily units of all vintages. This proposal provides a continuous operation coupled with balanced flow to minimize pressure differential between units and thus reduce or eliminate the cross flow between adjacent units.

For single family attached units there is no restriction on ventilation system design but continuous operation is required. For single family dwellings there are no restriction on system design or control beyond the tables that set the ventilation CFM.

The local exhaust requirements in the current code are largely unchanged except that minimal continuous flow has been removed from the current language.

The proposed code amendment is substantially simplified from the current language and allows the building officials to check two significant table to establish compliance. The controls which are now unclear and allow many options that would otherwise confuse or degrade the ventilation provided is now limited at least for multifamily construction which would allow a very much simplified and enforceable standard for these systems.

6. **Specify what criteria this proposal meets.** You may select more than one.
   - X The amendment is needed to address a critical life/safety need.
   - ☐ The amendment clarifies the intent or application of the code.
   - ☐ The amendment is needed to address a specific state policy or statute.
   - ☐ The amendment is needed for consistency with state or federal regulations.
   - X The amendment is needed to address a unique character of the state.
   - ☐ The amendment corrects errors and omissions.

7. **Is there an economic impact:** X Yes ☐ No
   Explain:

If there is an economic impact, use the tool below to estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. If preferred, you may submit an alternate cost benefit analysis.

Provide your best estimate of the construction cost (or cost savings) of your code change proposal? (See OFM Life Cycle Cost **Analysis tool** and **Instructions;** use these **Inputs. Webinars on the tool can be found Here and Here**)

$1.20/square foot ($950/ dwelling unit- Multi-family only)
[This change does not imply a system change for other residential units.]

Assumptions:

- 10 units @ 800 sf/unit. Double loaded corridor
- 50 CFM/unit ventilation requirement
- Two penetration in each unit (supply and return) with 4" round metal duct (fire damper not required) [26 sq.in. per unit, 180 sq.ft. unit common wall to the corridor]
- Remove one bath fan and duct penetration in each unit, $200/unit credit.

Cost calculations:

○ 500 CFM Lossnay ERV or equivalent	$3000	(bid price at $6/CFM)
○ Exterior penetrations, ducts, terminations	1500	(bids estimate)
○ Interior duct at Corridor 2 @100 ft.	2000	
○ Unit transitions, ducts, ducts grills @ $500/unit	5000	
○ Unit credit (one penetration, bath fan and duct) @200/unit	(2000)	
○ Total system cost (balanced system with ERV core)	$9500	
○ Cost per unit (10 units)	$950	
○ Cost per sq.ft. (8000 sq.ft.)	$1.20/sf (units only)	

Benefit calculations:

○ Energy savings: .65 Sensible heat recovery (heating only)	940kWh/unit
○ Annualized system benefit @ 0.09/kWh	$85
○ Annualized system cost (4%, 15 year life)	$55
○ Benefit/cost	1.5
○ Payback (full system)	11.2 years

IAQ benefit not quantified-- but significant health benefits and reduced occupant complaints are anticipated.

List any code enforcement time for additional plan review or inspections that your proposal will require, in hours per permit application:

The change proposal will require less interaction with the proposer. The Building official can establish compliance with the review of two prescriptive tables.

Please send your completed proposal to: sbcc@des.wa.gov

All questions must be answered to be considered complete. Incomplete proposals will not be accepted.