

HRAI Technical Commentary

Residential Ventilation Issues

by Dara Bowser & Bob Allison

Using the HRAI Ventilation Record for Ventilation System Compliance

The OBC sets out requirements for residential ventilation in section 9.32. This section sets out prescriptive requirements but also allows (and in some cases requires) "good engineering practice" equivalents to be used by referring to Part 6 of the OBC. This article describes the use of the HRAI Ventilation Record under 9.32, as well with good engineering practice requirements.

"Principal Exhaust Fan Capacity" of OBC section 9.32 is equivalent to the *Design Airflow-low speed* of the system. The low speed is required to be between 40 and 60% of the "MVC" (TVC in OBC 9.32). The high speed should be equal to or greater than the MVC/TVC. Blanks are provided for HRV performance parameters, as well as for local exhaust fans.

ABOUT THE FORM

The HRAI Ventilation Record is produced by HRAI for use in any Canadian jurisdiction for the purpose of providing information about the ventilation system in a house. It is organized into 7 sections as follows:

1) **Ventilation Capacity:** This section allows the user to determine the required ventilation capacity for a house. The section on the current form which is titled "Minimum Ventilation Capacity" (MVC) is the same as the "Total Ventilation Capacity" (TVC) required by the OBC section 9.32.

2) **Installed Equipment:** The first part of this section provides a place for the user to record the specific equipment which is used in the installation. The "System Installed to Provide MVC" section is equivalent to the "Principal Exhaust Fan" in the OBC section 9.32. In this form however, the

3) **Other Appliances:** This queries for heating system type, combustion appliances types and the existence of other exhaust equipment. This information is important in determining the ventilation system distribution requirements, as well as the depressurization control requirements. The information contained in this section should allow a person to select the house type and ventilation system option using OBC section 9.32.

The key piece of information for the building official in this section is the last line:

HRAI RESIDENTIAL MECHANICAL VENTILATION RECORD	
For systems designed and installed in conformance with CAN-CSA F326 M91.	
MINIMUM VENTILATION CAPACITY (MVC)	
Bent & Master Bdrm	10 L/s
Other Bedrooms	5 L/s
Bathrooms & Kitchen	5 L/s
Other Rooms	5 L/s
TOTAL	25 L/s
CONTINUOUS EXHAUST CAPACITY	
Kitchens	30 L/s
Bathrooms	10 L/s
TOTAL	40 L/s
INTERMITTENT EXHAUST CAPACITY	
Kitchens	50 L/s
Bathrooms	25 L/s
TOTAL	75 L/s
SYSTEM INSTALLED TO PROVIDE MVC	
Manufacturer	
Model:	<input type="checkbox"/> HVI
Design Airflow:	L/s High L/s Low
% Sensible Efficiency @ 0°C	watts
% Sensible Efficiency @ 25°C	watts
ADDITIONAL VENTILATION EQUIPMENT	
LOCATION	MODEL L/s FONES HVI
HEATING SYSTEM	
<input type="checkbox"/> Forced Air	<input type="checkbox"/> Non Forced Air
<input type="checkbox"/> Electric	<input type="checkbox"/> Gas <input type="checkbox"/> Oil
COMBUSTION APPLIANCES	
<input type="checkbox"/> No combustion appliances	No depressurization limit
<input type="checkbox"/> Solid Fuel (including Fireplaces)	5 pa. limit
<input type="checkbox"/> Direct Vent (Sealed Combustion) only	No dep. limit
<input type="checkbox"/> Positive venting induced draft	5 pa. dep. limit
<input type="checkbox"/> Natural draft or B-vent	5 pa. limit
OTHER EXHAUST EQUIPMENT	
<input type="checkbox"/> Clothes Dryer	75 L/s
<input type="checkbox"/> Down-draft Cook-top	110 L/s
Other:	L/s
DEPRESSURIZATION TEST REQUIRED? <input type="checkbox"/> yes <input type="checkbox"/> no	
LOCATION OF INSTALLATION	
Lot & Plan #	
Address	
BUILDER	
R-2000 I.D.#	
Name	4
Address	
City	Code
Tel.	Fax
INSTALLING CONTRACTOR	
Name	
Address	
City	Code
Tel.	Fax
MEASURED VENTILATION (MVC System)	
Supply:	L/s High L/s Low
Exhaust:	L/s High L/s Low
INSTALLATION CHECKLIST	
<input type="checkbox"/> Controls functioning	<input type="checkbox"/> Fans operating & clean
<input type="checkbox"/> Filters clean	<input type="checkbox"/> Flow Measuring Stations
<input type="checkbox"/> Dampers accessible	<input type="checkbox"/> Insulated duct sealed
<input type="checkbox"/> Drain loop and connection	
<input type="checkbox"/> Distribution to all rooms (non-forced air)	
<input type="checkbox"/> Forced-air system continuous mode (coupled to forced air)	
<input type="checkbox"/> Grease filter kitchen intake (if duct inaccessible for cleaning)	
<input type="checkbox"/> Kitchen exhaust 4 ft from range	
<input type="checkbox"/> Exhaust 4" above grade	<input type="checkbox"/> Supply 12" above grade
<input type="checkbox"/> Supply intake 6ft from exhaust (recommended)	
<input type="checkbox"/> Supply intake 3ft to other exhausts	
Other:	
DESIGNER CERTIFICATION	
I hereby certify that this ventilation system has been designed & installed according to the requirements of:	
<input type="checkbox"/> CAN-CSA F326-M91	<input type="checkbox"/> NBC '90 (Section 9.32.3)
Name	
Signature	7
Date	HRAI#

DEPRESSURIZATION TEST REQUIRED?

yes no

For systems where a spillage susceptible combustion appliance is installed, "good engineering practice" requirements call for a depressurization test or calculation. If the response to this line is

"yes" then a depressurization test must be carried out successfully.

4) General Information: Spaces are provided for the identification of the house in question as well as the Builder and Installer.

5) Measured Ventilation: This section is used for entering the actual amount of ventilation measured on site after the ventilation system has been installed. The *measured ventilation* should correspond to the *Design Airflow* information which appears opposite this section (section 2, part 1). Completion of this section shows that the system has actually been "balanced".

6) Installation Checklist: This provides a handy checklist of key points which should be checked by the installer at system start-up. Depending on the design of the particular system, not all of the items will apply.

7) Certification: Although this section is labelled "Designer Certification", it may be completed by the installer, designer, or a third party. In essence, it identifies the person who is responsible for the ventilation system performance at the point of start-up.

Persons who attend an HRAI Ventilation Installation & Design Course are instructed on the proper completion of this form.

USING THE FORM

The primary use of this form is for "Part 6" ventilation system installations. When completed, this form becomes a "Performance Certificate" which may be used by the building official to assist in judging compliance to the OBC. If CSA F326 is being used as the "good engineering practice" standard for compliance, the HRAI Ventilation Record is used as the "Form A" required by that standard.

Because the form contains much of the same information as the HRAI/OBOA "Ventilation Design Summary", some building officials may accept partially complete Ventilation Records (all sections complete except 5 & 6) as the basis of a ventilation permit application.

An alternate use of this form is to organize the requirements of sentence 9.32.3.11.(7) which states "All start-up procedures recommended by the manufacturer (of the HRV) including air-flow balancing and air-flow determination shall be followed."

As it is usually impractical for the inspector to

witness or carry out the tests, a building official could ask that the results of these tests be provided in the form of a certificate completed by the installer or another appropriately qualified person. The HRAI Ventilation Record is the industry-standard certificate which is available for this purpose.

Although there is nothing to prevent another person from using this form, most users are HRAI Certified Ventilation Installers and Designers, all of whom have received instruction on the proper use of the form.

The use of this form is addressed in the OBOA course "Residential Ventilation for Building Officials". Blank forms are available from HRAI, 5045 Orbitor Dr. #11-300, Mississauga, Ont., L4W 4Y4, tel 905-602-4700 or 800-267-2231, fax 905-602-1197.

Conclusion: The HRAI Ventilation Record when completed, becomes a *Performance Certificate* which can assist the building official in judging compliance of individual ventilation systems. Although it was designed as a compliance tool for use with systems which are provided under "good engineering practice" (Part 6) rules, it may be also used to respond to reporting requirements called up in 9.32.

* *Dara Bowser is an HRAI Ventilation Instructor, an associate member of the CSA Technical Committee on Residential Mechanical Ventilation. Dara has been involved in residential ventilation as a consultant, manufacturer, and trainer for the past 12 years.*

* *Bob Allison is the Deputy Chief Building Official of the Regional Municipality of Halldimand-Norfolk and has 20 year's experience as a building official.*

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