



# Mechanical Ventilation Design Review Form

## Heat Recovery Ventilator Systems

For use by Principal Authority			
Application No.:		Permit No. (if different):	
B		Roll No.:	
Application submitted to: <b>Municipality of Shuniah, 420 Leslie Avenue, Thunder Bay, ON, P7A 1X8</b>			
A. Project Information			
Building number, street name		Unit number	Lot/con.
Municipality	Postal Code	Plan number/other description	
Purpose Use of Building:			
B. Applicant			
Applicant is: <input checked="" type="checkbox"/> Owner or <input checked="" type="checkbox"/> Authorized agent of owner			
Last name		First Name	Corporation or partnership
Street address		Unit number	Unit number
Municipality	Postal Code	Province	E-mail
Telephone number	Fax	Cell number	
C. Type of Building			
<input type="checkbox"/> 1.) Detached	<input type="checkbox"/> 2.) Row	<input type="checkbox"/> 3.) Multi-Residential	<input type="checkbox"/> 4.) Other
D. Type of Heating System(s)			
<input type="checkbox"/> Forced Air	<input type="checkbox"/> Baseboard	<input type="checkbox"/> Other	<input type="checkbox"/> Solid Fuel Appliances
<input type="checkbox"/> Oil	<input type="checkbox"/> Gas	<input type="checkbox"/> Other	
<input type="checkbox"/> Type I (1)	<input type="checkbox"/> Type II (1)	<input type="checkbox"/> Type III (1)	
E. Hot Water Source			
<input type="checkbox"/> Gas	<input type="checkbox"/> Other		
<input type="checkbox"/> Type I (1)	<input type="checkbox"/> Type II (1)	<input type="checkbox"/> Type III (1)	
F. Combustion Air			
Provide Details			
_____			
_____			
G. Type of Equipment Applied			
H.R.V. (Certified to C.S.A - C.22.2 No. 113 and Performance Tested to CSA c439/H.V.I.)			
Manufacturer			
Brand Name		Model No.	
H. Type of Controls			
Dehumidistat With			
<input type="checkbox"/> 1.) Interval Timers	<input type="checkbox"/> 2.) Manually Operated Switch	<input type="checkbox"/> 3.) HRV Controls(s) - must be centrally located adjacent to "circulation fan" control and identified. NOTE: manufacturers remote control unit acceptable	
I. Type of Defrost			
<input type="checkbox"/> 1.) Detached	<input type="checkbox"/> 2.) Bypass	<input type="checkbox"/> 3.) Recirculation	<input type="checkbox"/> 4.) Other
J. Distribution System			
<input type="checkbox"/> 1.) Separate/Dedicated (Duct Size and Layout Drawing Required) (3)		<input type="checkbox"/> 2.) Integrated with Furnace (Direct Connection to R/A System Required) (4)	
Manufacturer		Model No.	
BTU/1000 Output		Design Static Pressure Diff. of R/A Plenum (Pa)	
Multi Speed Fan	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Continuous Operation	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Preheating Required	<input type="checkbox"/> Yes ( ____ Watts) <input type="checkbox"/> No		
(Control switch for systems which utilize the forced air heating/cooling systems must be centrally located and identified as the "CIRCULATION FAN".)			

**K. Supply Ventilation (Greater of A or B)**

A) 'Rooms'				Or	B) Exhaust Ventilation Continuous			
		L/s	cfm			L/s	cfm	
Bsmt. & Master Bdrm.	_____ @ 10 L/s (20 cfm)	_____	_____		Bsmt. & Master Bdrm.	_____ @ 30 L/s (60 cfm)	_____	_____
Other Bedrooms	_____ @ 5 L/s (10 cfm)	_____	_____		Other Bedrooms	_____ @ 15 L/s (20 cfm)	_____	_____
Bathrooms & Kitchen	_____ @ 5 L/s (10 cfm)	_____	_____		<b>Total</b>		_____	_____
Other Habitable Rooms	_____ @ 5 L/s (10 cfm)	_____	_____		Minimum Supply Required <sup>(5)</sup>		_____	_____
<b>Total</b>		_____	_____					

**L. Outside Vented Mechanical Exhaust System**

	L/s	cfm		L/s	cfm
<input type="checkbox"/> Clothes Dryer (Default 160 cfm)	_____	_____		<input type="checkbox"/> Bathroom (Default 50 cfm)	_____
<input type="checkbox"/> Central Vacuum	_____	_____		<input type="checkbox"/> Other	_____
<input type="checkbox"/> Kitchen Range Hood (Default 100 cfm)	_____	_____		<b>Total</b>	_____
					_____

**M. Relief/Makeup Air Required** Provide details how Relief/Makeup Air is achieved.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**N. CSA F326 House Pressure Limits**

1. For houses with non-direct vent combustion appliances.

2. For houses with only direct vent combustion appliances.

**Note:** - Include all ventilation fans in test.  
- Also include the dryer and the next largest fan for intermittent (Reference Exhaust) pressure measurement.

**O. Addendum To Application**

- Note (1)** Combustion Appliance Category  
Type I - Natural Draft Type  
Type II - Induced Draft Type  
Type III - Sealed Unit or Non-Fuel Burning Appliances
- Note (2)** Solid fuel appliance must have provisions for combustion air.
- Note (3)** Part 9 of the Ontario Building Code has duct sizing provisions for dedicated systems.
- Note (4)** This Department assumes that all furnaces/ductwork are sized in accordance with good engineering practice. As per Part 6 of the Ontario Building Code.
- Note (5)** Must include low temperature ventilation correction rate for HRV.
- Note (6)** This Department strongly recommends that each project is field tested to determine relief/make-up air requirements.

**P. Certified Designer**

Last name		First Name		Registration/Cert.#/BCIN	
Street address				Unit number	Unit number
Municipality		Postal Code		Province	E-mail
Telephone number		Fax		Cell number	
Date		Signature			

## BASIC RESIDENTIAL MECHANICAL VENTILATION DESIGN REVIEW FORM "EXHAUST FAN ONLY"—SYSTEM

Location of Installation	Installing Contractor	Type of Heating System(s)
Name _____	Name _____	_____ Forced Air _____ Oil _____ _____ Gas _____ _____ Other _____
Address _____	Address _____	
City/Province _____	City/Province _____	
Postal Code _____	Postal Code _____	
Telephone No.: _____	Telephone No.: _____	

**① Exhaust "Fan" only Ventilation Systems can only be used with Type 1 Houses which:**

- Have 4 or less bedrooms.
- Have a self contained forced air ducted heating system.
- Do NOT include any electric space heating.
- Do NOT have any solid fuel fired combustion appliances. (eg. Wood burning: stoves, fire places, inserts, furnaces..)
- Do NOT contain any non-solid (gas) fuel fireplaces which are not direct vented. (Mechanically vented: induced draft not allowed)
- Contains only mechanically vented induced draft or direct vented combustion appliances.(Furnaces/hot water tanks)

Total Ventilation Capacity Required—Table 9.32.3.3(9.32.3.3.(1)	Principal Ventilation Fan Switch <span style="float: right;">②</span>
<b>ROOMS</b> <span style="float: right;">L/s    cfm</span> Bsmt. & Master Bdrm _____ @ 10 L/s (20cfm) _____ Other Bedrooms _____ @ 5 L/s (10cfm) _____ Bathrooms & Kitchen _____ @ 5 L/s (10cfm) _____ Other Habitable Rooms _____ @ 5 L/s (10cfm) _____ Minimum Total Ventilation REQUIRED = _____	Location - _____  Switch must be centrally located in the dwelling and shall be labelled "VENTILATION FAN" 9.32.3.4.(2),(3),(4)

Principal Exhaust Fan - Ventilation Capacity Required	Circulation Fan Switch <span style="float: right;">②</span>
Actual Fan Capacity _____ (cfm) > Principal Exhaust (Table 9.32.3.4.A.) Fan Capacity Required _____ (cfm) Number of Bedrooms _____  ⑦ Is Fan Capacity control required? _____ Sec.9.32.3.4.(6) Principal Exhaust Fan location _____ Fan Manuf. _____ Model No. _____ Sone Rating (Max 2.5) _____ Exhaust Duct size (Table 9.32.3.4.B) _____ <span style="float: right;">③</span>	Location - _____  The forced air heating system circulation fan shall be controlled by a manual switch adjacent to the ventilation fan switch and shall be labelled "CIRCULATION FAN" 9.32.3.6.(4),(5)

⑤ Supplemental Ventilation Capacity 9.32.3.5.	Supplemental Ventilation Fan Switch(s)
Total Ventilation Capacity Required _____ cfm _____ L/s  _____ Less Principal Ventilation Capacity _____ cfm _____ L/s Required Supplemental Vent. Capacity _____ cfm _____ L/s	Locations - 1. _____ Manual switches shall be located in the same room as the exhaust air inlet 2. _____  (Exhaust Fan) NOTE: An Exhaust Air intake shall be installed in each kitchen, bathroom and water closet room (9.32.3.5.2)

Supplemental Fans (Table 9.32.3.9.)	Determine if makeup/relief air should be considered?																																																								
<table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">Location</th> <th style="width: 10%;">Fan Manuf.</th> <th style="width: 10%;">Model</th> <th style="width: 10%;">L/s</th> <th style="width: 10%;">CFM</th> <th style="width: 10%;">Sones (Max 2.5)</th> <th style="width: 10%;">Exhaust Duct size (Table 9.32.3.9.)</th> </tr> <tr> <td>1. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>2. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td colspan="7">Total</td> </tr> <tr> <td colspan="7">TOTAL VENTILATION SUPPLIED (_____) ≥ Total vent cap. req'd Fan capacity/ratings as per CAN/CSA C260 and CSA-C22.2 No. 113</td> </tr> </table>	Location	Fan Manuf.	Model	L/s	CFM	Sones (Max 2.5)	Exhaust Duct size (Table 9.32.3.9.)	1. _____	_____	_____	_____	_____	_____	_____	2. _____	_____	_____	_____	_____	_____	_____	Total							TOTAL VENTILATION SUPPLIED (_____) ≥ Total vent cap. req'd Fan capacity/ratings as per CAN/CSA C260 and CSA-C22.2 No. 113							<table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 80%;">Outside Vented Mechanical Exhaust Systems</th> <th style="width: 10%;">L/s</th> <th style="width: 10%;">cfm</th> </tr> <tr> <td>_____ Clothes Dryer (Default 160 cfm)</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____ Central Vacuum</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____ Kitchen Range Hood</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____ Bathroom</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____ Other _____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td colspan="2" style="text-align: right;">TOTAL</td> <td>_____</td> </tr> </table>	Outside Vented Mechanical Exhaust Systems	L/s	cfm	_____ Clothes Dryer (Default 160 cfm)	_____	_____	_____ Central Vacuum	_____	_____	_____ Kitchen Range Hood	_____	_____	_____ Bathroom	_____	_____	_____ Other _____	_____	_____	TOTAL		_____
Location	Fan Manuf.	Model	L/s	CFM	Sones (Max 2.5)	Exhaust Duct size (Table 9.32.3.9.)																																																			
1. _____	_____	_____	_____	_____	_____	_____																																																			
2. _____	_____	_____	_____	_____	_____	_____																																																			
Total																																																									
TOTAL VENTILATION SUPPLIED (_____) ≥ Total vent cap. req'd Fan capacity/ratings as per CAN/CSA C260 and CSA-C22.2 No. 113																																																									
Outside Vented Mechanical Exhaust Systems	L/s	cfm																																																							
_____ Clothes Dryer (Default 160 cfm)	_____	_____																																																							
_____ Central Vacuum	_____	_____																																																							
_____ Kitchen Range Hood	_____	_____																																																							
_____ Bathroom	_____	_____																																																							
_____ Other _____	_____	_____																																																							
TOTAL		_____																																																							

④ Distribution System	Makeup/relief air provisions highly recommended if outside vented mechanical exhaust systems other than principal and supplementary exhaust fans or clothes dryer are installed.
Integrated with Furnace via control switch centrally located. Combustion air required? <input type="checkbox"/> No <input type="checkbox"/> Yes _____ Manufacturer _____ Vent Size _____ BTU/1000 Output _____	Relief/Makeup air provided? (Provide Details) <input type="checkbox"/> Yes <input type="checkbox"/> No _____

**GENERAL NOTES/EXPLANATORY MATERIAL**

- ① Installation of solid fuel appliance and electric space heating require heat recovery systems as per 9.32.3.6.(3) and 9.32.3.7.(3).  
For the purposes of this Subsection, a non solid fuel-fire appliance shall be classified as:
  - a) Direct vented whereby the combustion air is supplied directly from the outdoors to the combustion chamber via a sealed passageway, and the products of combustion are exhausted directly outdoors through an independent sealed vent.
  - b) Mechanically vented induced draft whereby combustion air is supplied from within the building envelope and the products of combustion are positively conveyed to the outdoors by means of a dedicated sealed vent, or
  - c) Natural draft whereby combustion air is supplied from within the building envelope and the products of combustion are conveyed to the outdoors through a chimney or Type "B" vent.
- ② Ref. 9.32.3.4.(2) Controlled by manual switch.  
9.32.3.4.(3) Dehumidistat permitted, provided manual switch can override.  
9.32.3.4.(4) Manual switch centrally located and identified with words "Ventilation Fan".  
9.32.3.4.(7) If integrated with forced air heating system, connect to return air side, minimum 1m upstream of any outdoor air supply duct.  
9.32.3.6.(4),(5) Forced Air circulation fan controlled by manual switch located by Ventilation Fan Switch. Switch to be labelled "Circulation Fan".
- ③ In applying Table 9.32.3.4.B  
9.32.3.4.(9a) maximum duct length 12m.  
9.32.3.4.(9b) maximum 4 elbows.  
9.32.3.4.(10a) inlet duct size if more than one inlet, may be decreased by 25mm (1").  
9.32.3.4.(10b) exhaust duct size if connected to F/A heating system increase by 25mm (1").
- ④ Heating systems to be designed and installed to good engineering practice as per Part 6 of the Ontario Building Code, Article 6.2.1.1.
- ⑤ Capacity of supplementary fan(s) is the total ventilation capacity minus the principal exhaust fan capacity.
- ⑥ In applying Table 9.32.3.5  
9.32.3.5.(4a) maximum duct length 9m.  
9.32.3.5.(4b) maximum 4 elbows.
- ⑦ Where the installed capacity of the principal exhaust fan exceeds the minimum capacity required (Table 9.32.3.4.A) by more than 50%, the control switch shall include provisions to allow reduction of the flow to within  $\pm 10\%$  of the minimum capacity.

**TABLES**

**Table 9.32.3.4.A.  
Forming Part of Sentence 9.32.3.4.(1)**

Principal Exhaust Fan Capacity		Number of Bedrooms in Dwelling Unit	Principal Exhaust Duct Size			
Number of Bedrooms in Dwelling Unit	Capacity, L/s (cfm)		Minimum Exhaust Duct Diameter			
			Ducts Connected to Inlet and Outlet of Principal Exhaust Fan		Ducts Connected to One Side Only of Principal Exhaust Fan	
		Smooth Duct, mm (in)	Flexible Duct, mm (in)	Smooth Duct, mm (in)	Flexible Duct, mm (in)	
1	15 (31.8)	100(4)	125(5)	100(4)	125(5)	
2	22.5 (47.7)	125(5)	150(6)	125(5)	150(6)	
3	30 (63.6)	125(5)	150(6)	150(6)	175(7)	
4	37.5 (79.5)	150(6)	175(7)	150(6)	175(7)	
More than 4	Part 6 Design	Part 6 Design	Part 6 Design	Part 6 Design	Part 6 Design	
Column 1	2	2	3	4	5	

**Table 9.32.3.4.B.  
Forming Part of Sentence 9.32.3.4.(9)**

**Table 9.32.3.5.  
Forming Part of Sentence 9.32.3.5.(4)**

Kitchen, Bathroom and Water Closet Room Exhaust Duct Size			Fan Sound rating		
Fan Capacity, L/s (cfm)	Minimum Exhaust Duct Diameter <sup>(1)</sup>		Type of fan	Maximum Sound Ratings	
	Ducts connected to Inlet & Outlet of exhaust fan, mm(in)	Ducts connected to one side only of exhaust fan, mm(in)		Sone	dba
25 (53)	125 (5")	125 (5")	Principal Exhaust Kitchen Bathroom or Water Closet Room Supply	2.5	59
50 (106)	150 (6")	150 (6")		3.5	
Column 1	2	3		2.5	
<b>Note to Table 9.32.3.5.</b> (1) Where flexible duct is used, the duct diameter shall be increased by 25 mm (1in.)			Column 1	2	3

**Table 9.32.3.9  
Forming Part of Sentence 9.32.3.9.(4)**