

# 1 Ventilation Checklist 1—Forced Air Systems SENTENCE 9.32.3.4(2)

Use this Checklist where **forced air heating system ducts intake and distribute** ventilation air.

Civic Address _____		Permit No. _____	
Climate Zone: _____	Number of Bedrooms	<input style="width: 50px; height: 20px;" type="text"/>	(A) A bedroom is a room with an openable window (minimum dimensions apply), a closet and a closing interior door.
	Total Floor area of living space	<input style="width: 50px; height: 20px;" type="text"/> ft <sup>2</sup>	(B)
	Total Interior Volume of Dwelling	<input style="width: 50px; height: 20px;" type="text"/> ft <sup>3</sup>	Total volume includes all heated interior spaces (including crawlspace if heated).
.5 ACH (air changes/hr) = Volume x 0.5 ÷ 60 =		<input style="width: 50px; height: 20px;" type="text"/> cfm	(C) Exhaust appliances exceeding .5 ACH may require make-up air.

### 1. Principal Ventilation System Exhaust Fan Minimum Air-flow Rate

Use the bedroom count from Box (A) and Total square footage from Box (B) above and Table 9.32.3.5. to determine

**Minimum Required Principal Exhaust System Capacity**  cfm (D)

### 2. Principal System Fan Choice

a) Exhaust Fan continuous running Make \_\_\_\_\_ Model \_\_\_\_\_ Sone Rating \_\_\_\_\_

Location: \_\_\_\_\_ **Capacity at 0.2 ESP**  cfm (E) Must be ≥ than Box (D)  
If CEV, capacity @0.4ESP

### 3. Fan Duct Size and Equivalent Length

a) Installed Equivalent Length:  
Length of duct \_\_\_\_\_ ft + Ext. hood **30 ft +** ( \_\_\_\_\_ # elbows at 10 ft each = \_\_\_\_\_ ) =  ft (F)

b) Choose type of duct: Flex duct  or Rigid (smooth) duct

c) Duct size required to flow Box E cfm through Box F equivalent length of duct =  in Ø  
Use Table 9.32.3.8 (3) to determine duct size.

### 4. Required Kitchen and Bathroom Exhaust Fans: Re-list below if Principal Exhaust Fan meets all or part of Kitchen/Bathroom spot Exhaust requirements.

ROOM	REQUIRED EXHAUST RATE Table 9.32.3.6	EXHAUST EQUIPMENT						Principal System CFM
		Spot Exhaust Kitchen & Bath WALL/CEILING FANS					Ex.Fan/CEV	
		Fan Make & Model	CFM @ 0.2 ESP Manf. Rated	*Duct Sizing per Table 9.32.3.8.(3)		Max. Equiv. Length per table	Installed Equiv. Length	
		rigid	flex					
* For fan capacities <b>exceeding</b> 175cfm in Table 9.32.3.8(3), follow manufacturer's installation instructions or use good engineering practice to size duct. See <i>Ventilation Guidelines</i> Appendix page 16-A, <i>Duct Sizing for Larger Fans</i> .							TOTAL (must = Box E)	

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**Removed reference to RADON in Make-up Air Requirements**

**5. Fresh Air must be ducted from outside to Return Air of Forced Air Heating for distribution.**

- a) Ventilation air duct is connected not more than 15ft, nor less than 10ft upstream of the heating appliance, unless a flow control device is used.
- b) Duct Size for Fresh Air intake to RA. Choose one.
  - Rigid Duct: 4" Ø minimum, must be insulated & vapour barriered for full length, OR
  - Flex Duct: 5"Ø minimum, must be insulated & vapour barriered for full length.
- c) **Furnace fan continuous operation.**

**6. Forced Air Heating System is ducted to supply air to every bedroom and any level without a bedroom.**

**7. If Heated Crawlspace present, (Choose one)**

- Minimum of one RA grille located in the crawlspace, OR
- No RA grille in crawlspace, choose ventilation Option 1, 2, or 3 per sentence 9.32.3.7 (2)

**MAKE-UP AIR Requirements**

**1. NAFFVA (Naturally Aspirated Fuel Fired Vented Appliance) present in dwelling unit?** (per Sentence 9.32.4.1)

- No, Omit Steps 2 & 3
- Yes, Proceed to Step 2

**2. Exhaust Appliance present which exceeds Box C 0.5 ACH:**

- No such appliance. Omit Step 3
- Yes, Commit to Depressurization Test (See CAUTION, TECA Vent Manual pg 24)
- Yes, Proceed to Step 3

**3. Use Active Make-up Air for Exhaust Appliance. (Choose a or b)**

**Make-up Air Fan required:**

Fan Make \_\_\_\_\_ Model \_\_\_\_\_ Exhaust Appliance Actual Installed Cfm \_\_\_\_\_  
 Make-up Air Fan Cfm \_\_\_\_\_  
 Duct diameter \_\_\_\_\_ inches Fan Location \_\_\_\_\_

**Fan interconnected with exhaust appliance fan.** Fan ducted to \_\_\_\_\_

**a) Active Make-up Air delivered to an Unoccupied Area first** (not directly to room containing the appliance).

- i) Tempering Required per 9.32.4.1.(4)(a):  
 Show calculation how make-up air will be tempered to at least 34°F (1°C) before entering unoccupied area.

$$\frac{\text{Make-up Fan cfm} \times 1.08 \times (34^\circ \text{F} - \text{Winter Design Temp your location})}{3412 \text{ BTUH/kw}} = \text{Duct Heater (kw)}$$

- ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill size \_\_\_\_\_ sq. in. Location \_\_\_\_\_

- iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied area: Show calculation and **describe how make-up air will be further tempered** to at least 54°F (12°C).

$$\frac{\text{Make-up Fan cfm} \times 1.08 \times (54^\circ \text{F} - 34^\circ \text{F})}{3412 \text{ BTUH/kw}} = \text{Heat from unoccupied area required to raise temp by } 20^\circ \text{F}$$

Tempered by: \_\_\_\_\_

**OR b) Active Make-up Air delivered to an Occupied Area: Tempering Required.** Show calculation how make-up air will be tempered to at least 54°F (12°C).

$$\frac{\text{Make-up Fan cfm} \times 1.08 \times (54^\circ \text{F} - \text{Winter Design Temp your location})}{3412 \text{ BTUH/kw}} = \text{Duct Heater (kw)}$$

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 Signature \_\_\_\_\_  
 Company \_\_\_\_\_

Phone \_\_\_\_\_  
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# 2 Ventilation Checklist 2—HRV Systems SENTENCE 9.32.3.4 (3) & (4)

Use this checklist when a centrally ducted HRV (heat recovery ventilator) is used alone or in combination with a Forced Air Heating System to meet principal ventilation system requirements.

Civic Address _____		Permit No. _____	
Climate Zone: _____	Number of Bedrooms <input style="width: 50px;" type="text"/>	(A)	A bedroom is a room with an openable window (minimum dimensions apply), a closet and a closing interior door.
	Total Floor area of living space <input style="width: 50px;" type="text"/> ft <sup>2</sup>	(B)	
	Total Interior Volume of Dwelling <input style="width: 50px;" type="text"/> ft <sup>3</sup>		Total volume includes all heated interior spaces (including crawlspace if heated).
.5 ACH (air changes/hr) = Volume x 0.5 ÷ 60 = <input style="width: 50px;" type="text"/> cfm		(C)	Exhaust appliances exceeding .5 ACH may require make-up air.

**1. Use the bedroom count (Box A above) and total square footage (Box B above) to determine the minimum principal Air Flow rate required by Table 9.32.3.5**

Minimum Required Rate  cfm (D)

**2. HRV Make \_\_\_\_\_ Model \_\_\_\_\_**

**3. HRV Capacity: CFM @ 0.4 ESP.** Box E must meet Box D requirement.  cfm (E)

**4. List Exhaust Grilles Locations:** 1 minimum @ 6 ft or higher from floor of uppermost level.


### 5. Required Kitchen and Bathroom Exhaust

If HRV used to meet all or part of Kitchen/Bathroom spot exhaust requirements list below.

ROOM	REQUIRED EXHAUST RATE Table 9.32.3.6	EXHAUST EQUIPMENT						Principal System CFM		
		Spot Exhaust Kitchen & Bath WALL/CEILING FANS							HRV	
		Fan Make & Model	CFM @ 0.2 ESP Manf. Rated	*Duct Sizing per Table 9.32.3.8.(3)					Max. Equiv. Length per table	Installed Equiv. Length
				Duct Dia (in Ø)		Length	Length			
rigid	flex									
							TOTAL (must = Box E)	<input style="width: 50px;" type="text"/>		

\* For fan capacities exceeding 175cfm in Table 9.32.3.8(3), follow manufacturer's installation instructions or use good engineering practice to size duct. See *Ventilation Guidelines* Appendix page 16-A, *Duct Sizing for Larger Fans*. © March 2015 TECA All Rights Reserved Checklist 2, pg1of2

**Removed reference to RADON in Make-up Air Requirements**

**6. HRV Fresh Air Distribution** (Choose a or b)

**a) Supply Air from HRV direct connect to Return Air of a Forced Air Heating System:**

- FA system fan and HRV fan continuous operation and
- FA system ducted to supply air to every bedroom and each floor level without a bedroom

**b) Supply Air from HRV distributed independently**

- Ducted to every bedroom and each floor level without a bedroom and
- HRV fan continuous operation

**7. If Heated Crawlspace present,** (Choose one)

- Minimum of one Forced Air System RA grille located in the crawlspace, OR
- No RA grille in crawlspace, choose ventilation Option 1, 2, or 3 per sentence 9.32.3.7 (2)

**MAKE-UP AIR Requirements**

**1. NAFFVA** (Naturally Aspirated Fuel Fired Vented Appliance) **present in dwelling unit?** (per Sentence 9.32.4.1)

- No, Omit Steps 2 & 3
- Yes, Proceed to Step 2

**2. Exhaust Appliance present which exceeds Box C 0.5 ACH:**

- No such appliance. Omit Step 3
- Yes, Commit to Depressurization Test (See CAUTION, TECA Vent Manual pg 24)
- Yes, Proceed to Step 3

**3. Use Active Make-up Air for Exhaust Appliance.** (Choose a or b)

**Make-up Air Fan required:**

Fan Make \_\_\_\_\_ Model \_\_\_\_\_ Exhaust Appliance Actual Installed Cfm \_\_\_\_\_  
 Make-up Air Fan Cfm \_\_\_\_\_  
 Duct diameter \_\_\_\_\_ inches Fan Location \_\_\_\_\_

- Fan interconnected with exhaust appliance fan.** Fan ducted to \_\_\_\_\_

**a) Active Make-up Air delivered to an Unoccupied Area first** (not directly to room containing the appliance).

i) Tempering Required per 9.32.4.1.(4)(a):

Show calculation how make-up air will be tempered to at least 34°F (1°C) before entering unoccupied area.

$$\frac{\text{Make-up Fan cfm} \times 1.08 \times (34^\circ \text{F} - \text{Winter Design Temp your location})}{3412 \text{ BTUH/kw}} = \text{Duct Heater (kw)}$$

ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill size \_\_\_\_\_ sq. in. Location \_\_\_\_\_

iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied area: Show calculation and **describe how make-up air will be further tempered** to at least 54°F (12°C).

$$\frac{\text{Make-up Fan cfm} \times 1.08 \times (54^\circ \text{F} - 34^\circ \text{F})}{3412 \text{ BTUH/kw}} = \text{Heat from unoccupied area required to raise temp by } 20^\circ \text{F}$$

Tempered by: \_\_\_\_\_

**OR b) Active Make-up Air delivered to an Occupied Area: Tempering Required.** Show calculation how make-up air will be tempered to at least 54°F (12°C).

$$\frac{\text{Make-up Fan cfm} \times 1.08 \times (54^\circ \text{F} - \text{Winter Design Temp your location})}{3412 \text{ BTUH/kw}} = \text{Duct Heater (kw)}$$

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 Signature \_\_\_\_\_  
 Company \_\_\_\_\_  
 Phone \_\_\_\_\_

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# 3

## Ventilation Checklist 3—Distributed CRV Systems SENTENCE 9.32.3.4(5)

Use this Checklist when a ducted Central Recirculating Ventilator (CRV) is used to meet the fresh air intake and distribution requirements and a Principal Exhaust fan meets the exhaust requirements.

Civic Address _____		Permit No. _____	
Climate Zone: _____	Number of Bedrooms	<input style="width: 50px; height: 25px;" type="text"/>	(A) A bedroom is a room with an openable window (minimum dimensions apply), a closet and a closing interior door.
	Total Floor area of living space	<input style="width: 50px; height: 25px;" type="text"/> ft <sup>2</sup>	(B)
	Total Interior Volume of Dwelling	<input style="width: 50px; height: 25px;" type="text"/> ft <sup>3</sup>	Total volume includes all heated interior spaces (including crawlspace if heated).
.5 ACH (air changes/hr) = Volume x 0.5 ÷ 60 =		<input style="width: 50px; height: 25px;" type="text"/> cfm	(C) Exhaust appliances exceeding .5 ACH may require make-up air.

### 1. Principal Ventilation System Exhaust Fan Minimum Air-flow Rate

Use the bedroom count from Box (A) and Total square footage from Box (B) above and Table 9.32.3.5. to determine

**Minimum Required Principal Exhaust System Capacity**  cfm (D)

### 2. Principal System Fan Choice

a) Exhaust Fan continuous running Make \_\_\_\_\_ Model \_\_\_\_\_ Sone Rating \_\_\_\_\_

Location: \_\_\_\_\_ **Capacity at 0.2 ESP**  cfm (E) Must be ≥ than Box (D)  
If CEV, capacity @0.4ESP

### 3. Fan Duct Size and Equivalent Length

a) Installed Equivalent Length:  
Length of duct \_\_\_\_\_ ft + Ext. hood **30 ft** + ( \_\_\_\_\_ # elbows at 10 ft each = \_\_\_\_\_ ) =  ft (F)

b) Choose type of duct: Flex duct  or Rigid (smooth) duct

c) Duct size required to flow Box E cfm through Box F equivalent length of duct =  in Ø  
Use Table 9.32.3.8 (3) to determine duct size.

### 4. Required Kitchen and Bathroom Exhaust Fans: Re-list below if Principal Exhaust Fan meets all or part of Kitchen/Bathroom spot Exhaust requirements.

ROOM	REQUIRED EXHAUST RATE Table 9.32.3.6	EXHAUST EQUIPMENT						Principal System CFM	
		Spot Exhaust Kitchen & Bath WALL/CEILING FANS							Ex.Fan/CEV
		Fan Make & Model	CFM @ 0.2 ESP Manf. Rated	*Duct Sizing per Table 9.32.3.8.(3)		Max. Equiv. Length per table	Installed Equiv. Length		Principal System CFM
rigid	flex								

\* For fan capacities **exceeding** 175cfm in Table 9.32.3.8(3), follow manufacturer's installation instructions or use good engineering practice to size duct. See *Ventilation Guidelines* Appendix page 16-A, *Duct Sizing for Larger Fans*. © March 2015 TECA All Rights Reserved Checklist 3, pg1of2

TOTAL (must = Box E)

**Removed reference to RADON in Make-up Air Requirements**

**5. CRV Fresh Air Intake & Mixing Fan** (Choose a or b)

- a) Box G CFM is minimum 2 times Box E cfm for **+5°F and warmer winter design temperature.**
- b) Box G CFM is minimum 3 times Box E for **less than +5°F winter design temperature.**

Make \_\_\_\_\_ Model \_\_\_\_\_ Capacity @   cfm (G)

- c) Duct Size for Fresh Air intake into return air of CRV: **0.4 ESP**
- Min 4"Ø rigid duct, must be insulated & vapour barriered for full length, OR
- Min 5"Ø, flex duct, must be insulated & vapour barriered for full length,

**6. CRV Fresh Air Circulation** (Choose a or b)

- a) Draw air from bedrooms and Supply air to common area.
- b) Draw air from common area and Supply air to bedrooms.

**7. If Heated Crawlspace present**

- Choose ventilation option 1, 2, or 3 per sentence 9.32.3.7 (2).

**MAKE-UP AIR Requirements**

**1. NAFFVA** (Naturally Aspirated Fuel Fired Vented Appliance) **present in dwelling unit?** (per Sentence 9.32.4.1)

- No**, Omit Steps 2 & 3
- Yes**, Proceed to Step 2

**2. Exhaust Appliance present which exceeds Box C 0.5 ACH:**

- No such appliance.** Omit Step 3
- Yes**, Commit to Depressurization Test (See CAUTION, TECA Vent Manual pg 24)
- Yes**, Proceed to Step 3

**3. Use Active Make-up Air for Exhaust Appliance. (Choose a or b)**

**Make-up Air Fan required:** Exhaust Appliance Actual Installed Cfm \_\_\_\_\_  
 Fan Make \_\_\_\_\_ Model \_\_\_\_\_ Make-up Air Fan Cfm \_\_\_\_\_  
 Duct diameter \_\_\_\_\_ inches Fan Location \_\_\_\_\_

- Fan interconnected with exhaust appliance fan.** Fan ducted to \_\_\_\_\_

**a) Active Make-up Air delivered to an Unoccupied Area first** (not directly to room containing the appliance).

- i) Tempering Required per 9.32.4.1.(4)(a):  
 Show calculation how make-up air will be tempered to at least 34°F (1°C) before entering unoccupied area.

Make-up Fan cfm \_\_\_\_\_ X 1.08 X (34° F – \_\_\_\_\_ °F Winter Design Temp your location) = \_\_\_\_\_ (kw)  
 3412 BTUH/kw Duct Heater

- ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill size \_\_\_\_\_ sq. in. Location \_\_\_\_\_

- iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied area: Show calculation and **describe how make-up air will be further tempered** to at least 54°F (12°C).

Make-up Fan \_\_\_\_\_ cfm x 1.08 x (54° F – 34°F) = \_\_\_\_\_ (kw) Heat from unoccupied area  
 3412 BTUH/kw required to raise temp by 20°F

Tempered by: \_\_\_\_\_

**OR b) Active Make-up Air delivered to an Occupied Area: Tempering Required.** Show calculation how make-up air will be tempered to at least 54°F (12°C).

Make-up Fan cfm \_\_\_\_\_ x 1.08 x (54° F – \_\_\_\_\_ °F Winter Design Temp your location) = \_\_\_\_\_ (kw)  
 3412 BTUH/kw Duct Heater

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**Installer Certification:**

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 Signature \_\_\_\_\_  
 Company \_\_\_\_\_  
 Phone \_\_\_\_\_

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# 4 Ventilation Checklist 4—Exhaust Fan & Passive Inlets SENTENCE 9.32.3.4(6)

Use this checklist for small ( $\leq 1800$  sqft), single level, **non-forced air** heated dwellings located in *mild coastal & moderate interior climates where winter design temperature is warmer than  $-4^{\circ}F$ .*

Civic Address _____		Permit No. _____	
Climate Zone: _____	Number of Bedrooms	<input type="text"/>	(A) A bedroom is a room with an openable window (minimum dimensions apply), a closet and a closing interior door.
	Total Floor area of living space	<input type="text"/> ft <sup>2</sup>	(B)
	Total Interior Volume of Dwelling	<input type="text"/> ft <sup>3</sup>	Total volume includes all heated interior spaces (including crawlspace if heated).
.5 ACH (air changes/hr) = Volume x 0.5 ÷ 60 =		<input type="text"/> cfm	(C) Exhaust appliances exceeding .5 ACH may require make-up air.

### 1. Principal Ventilation System Exhaust Fan Minimum Air-flow Rate

Use the bedroom count from Box (A) and Total square footage from Box (B) above and Table 9.32.3.5. to determine

**Minimum Required Principal Exhaust System Capacity**  cfm (D)

### 2. Principal System Fan Choice

a) Exhaust Fan continuous running Make \_\_\_\_\_ Model \_\_\_\_\_ Sone Rating \_\_\_\_\_

Location: \_\_\_\_\_ **Capacity at 0.2 ESP**  cfm (E) Must be  $\geq$  than Box (D)  
 If CEV, capacity @0.4ESP

### 3. Fan Duct Size and Equivalent Length

a) Installed Equivalent Length:  
 Length of duct \_\_\_\_\_ ft + Ext. hood **30 ft +** ( \_\_\_\_\_ # elbows at 10 ft each = \_\_\_\_\_ ) =  ft (F)

b) Choose type of duct: Flex duct  or Rigid (smooth) duct

c) Duct size required to flow Box E cfm through Box F equivalent length of duct =  in  $\varnothing$   
 Use Table 9.32.3.8 (3) to determine duct size.

### 4. Required Kitchen and Bathroom Exhaust Fans: Re-list below if Principal Exhaust Fan meets all or part of Kitchen/Bathroom spot Exhaust requirements.

ROOM	REQUIRED EXHAUST RATE Table 9.32.3.6	EXHAUST EQUIPMENT						Principal System CFM
		Spot Exhaust Kitchen & Bath WALL/CEILING FANS					Ex.Fan/CEV	
		Fan Make & Model	CFM @ 0.2 ESP Manf. Rated	*Duct Sizing per Table 9.32.3.8.(3)		Max. Equiv. Length per table	Installed Equiv. Length	
rigid	flex							

\* For fan capacities **exceeding** 175cfm in Table 9.32.3.8(3), follow manufacturer's installation instructions or use good engineering practice to size duct. See *Ventilation Guidelines* Appendix page 16-A, *Duct Sizing for Larger Fans*. © March 2015 TECA All Rights Reserved Checklist 4, pg1 of 2

TOTAL (must = Box E)	
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**Removed reference to RADON in Make-up Air Requirements**

**5. Required Inlets for passive Ventilation Air Supply**

- a) High wall installation (minimum 6 ft above floor)
- b) Located in each bedroom and at least one common area
- c) Inlet Free Area greater than or equal to 4 Sq In

**6. If Heated Crawlspace present**

- Choose ventilation option 1, 2, or 3 per sentence 9.32.3.7 (2).

**MAKE-UP AIR Requirements**

**1. NAFFVA (Naturally Aspirated Fuel Fired Vented Appliance) present in dwelling unit? (per Sentence 9.32.4.1)**

- No, Omit Steps 2 & 3
- Yes, Proceed to Step 2

**2. Exhaust Appliance present which exceeds Box C 0.5 ACH:**

- No such appliance. Omit Step 3
- Yes, Commit to Depressurization Test (See CAUTION, TECA Vent Manual pg 24)
- Yes, Proceed to Step 3

**3. Use Active Make-up Air for Exhaust Appliance. (Choose a or b)**

**Make-up Air Fan required:**

Fan Make \_\_\_\_\_ Model \_\_\_\_\_ Exhaust Appliance Actual Installed Cfm \_\_\_\_\_  
 Make-up Air Fan Cfm \_\_\_\_\_  
 Duct diameter \_\_\_\_\_ inches Fan Location \_\_\_\_\_

- Fan interconnected with exhaust appliance fan.** Fan ducted to \_\_\_\_\_

**a) Active Make-up Air delivered to an Unoccupied Area first (not directly to room containing the appliance).**

**i) Tempering Required per 9.32.4.1.(4)(a):**

Show calculation how make-up air will be tempered to at least 34°F (1°C) before entering unoccupied area.

$$\frac{\text{Make-up Fan cfm} \times 1.08 \times (34^\circ \text{F} - \text{Winter Design Temp your location})}{3412 \text{ BTUH/kw}} = \text{Duct Heater (kw)}$$

**ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill size \_\_\_\_\_ sq. in. Location \_\_\_\_\_**

**iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied area: Show calculation and describe how make-up air will be further tempered to at least 54°F (12°C).**

$$\frac{\text{Make-up Fan cfm} \times 1.08 \times (54^\circ \text{F} - 34^\circ \text{F})}{3412 \text{ BTUH/kw}} = \text{Heat from unoccupied area required to raise temp by } 20^\circ \text{F}$$

**Tempered by:** \_\_\_\_\_

**OR b) Active Make-up Air delivered to an Occupied Area: Tempering Required.** Show calculation how make-up air will be tempered to at least 54°F (12°C).

$$\frac{\text{Make-up Fan cfm} \times 1.08 \times (54^\circ \text{F} - \text{Winter Design Temp your location})}{3412 \text{ BTUH/kw}} = \text{Duct Heater (kw)}$$

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