Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Info	rmation					
Building number, s			State Control of the State Control		Unit no.	Lietteen
					Offic 110.	Lot/con.
Municipality		Postal code	Plan number/ other des	cription		
RICHMOND HILL	COLUMN TO SHEET THE TRANSPORT OF THE TRA					
	o reviews and takes	responsibility fo			Production of the second	Asi It Island
Name MICHAEL O'ROUF	DKE		Firm			
Street address	VI (L		HVAC DESIGNS LTD.	Unit no.		I
375 FINLEY AVE				202		Lot/con. N/A
Municipality		Postal code	Province	E-mail		In
AJAX		L1S 2E2	ONTARIO	info@hvacdes	igns.ca	
Telephone number		Fax number		Cell number		
(905) 619-2300		(905) 619-2375		()		
C. Design activi	ties undertaken by in	dividual identifie	d in Section B. [Build	ing Code Tab	le 3.5.2.1 OF Divis	sion C1
a Section 1			The state of the s			
☐ House ☐ Small Buildi	ngo	⊠ HVAC	-	<u>_</u> _	Building Structur	al
Large Buildi	ings	☐ Building	g Services on, Lighting and Pow		Plumbing – Hous	se
☐ Complex Bu	ıildings	☐ Fire Pro	otection		Plumbing – All B On-site Sewage	uildings Systems
Description of desig			Model:	2009 END		
HEAT LOSS / GAIN	CALCULATIONS			2005 2.10		
DUCT SIZING	CHANICAL VENTILATIO	N DECIGN COMM	, D) (
RESIDENTIAL SYS	TEM DESIGN per CSA-I	N DESIGN SUMM <i>A</i> F280-12	Project:	CENTREFIELD (\	WEST GORMLEY)	
D. Declaration o						
-	HAEL O'ROURKE			46.		
		int name)		declare tha	at (choose one as ap	propriate):
☐ I review	and take reconcibility fo	r the decima work a	n hahalf af a finn and t			
Division	C, of the Building Code. I	am qualified, and t	n behalf of a firm registere the firm is registered, in th	ea under subsec e	tion 3.2.4.of appropriate	
classes/	categories.					S
	Individual BCIN:				Richmond Hill	City of Richmond Hi
	Firm BCIN:					Building Division
⊠ I review :	and take responsibility for	r the design and am	qualified in the appropria	ito catagoni an	HVAC RE	VIEWED
designer	" under subsection 3.2	.5.of Di vision	n C, of the Building Code.	ite category as	IN DIRECT 1	
	Individual BCIN:	19669				PXV
	Basis for exemption from	om registration and	qualification:	O.B.C SENT	-Initials:	4)
☐ The desi						.,
Basis for	exemption from registrat	ion and qualification	on and qualification requirent:	ements of the Bu	uilding Code.	
		•			***************************************	
certify that:						
1. The	information contained	in this schedul	le is true to the best of my	knowledge.		
2. Thav	e submitted this applicati	on with the knowled	dge and consent of the fin	m.		
					1 101	
Septemb	per 10, 2021			Michan	Ofounde	* *
Da	te		-		Signature of Desi	gner
OTE:						

^{1.} For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d).of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.

^{2.} Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2 Tel: 905.619.2300 Fax: 905.619.2375 Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

DESIGNS LTD.

CSA-F280-12 SB-12 PERFORMANCE 0 75 75 291 0 0 0 0 0 654 896 . . . 784 LOSS 0 0 65 152 0 0 1238 0 0 0 10283 112 10 5598 0.84 4685 0.50 0 20 0 0 0 0 2 3 HEAT LOSS AT °F. HEAT GAIN AT °F. WINTER NATURAL AIR CHANGE RATE 0.284 SUMMER NATURAL AIR CHANGE RATE 0.086 0 0 0 0 0 0 0 2 0 12 GAIN 1039 0 0 170 0 0 0 0 67 19 1517 BATH 0 LOSS 0.24 56 511 LOSS 317 0 6 53 § & ± 0 0 0 0 11034 11874 0 0 0 0 0 0 0.31 4524 0 0.20 00000001000 0 0.30 0 2 0 0 0 2 4 0 0 0 0 0 163 224 DATE: Sep-21 LO# 87536 PWD 12 133 -0SS 0000 0.31 0 0 517 476 0 3 0.30 0 324 324 324 0 0 0 0 118 25 9 2256 121 354 240 923 .05\$\$
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STRUCTURAL HEAT LOSS: 32342

TOTAL COMBINED HEAT LOSS BTU/H: 33678

MICHAEL O'ROURKE

INDIVIDUAL BCIN: 19669

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		∢	١			All S/A	All S/A					CFR	ΑC		ш	TOTAL	ĄĘ	HEATIN	COOLIN			CFN AE EI TOTAL AD HEATIN

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TRUNK R 457 0.77 10.8 H 258 DUCT TRUNK R 6 0 0.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		TRUNK	STATIC	ROUND	RECT			VELOCITY		_		_	SOUND	RECT		VEL	OCITY	TRU	~	_	_	-		VELOC
TRUNK A 311 0.07 9.4 10 x 8 560 TRUNK G 0 0.00 0 0 x 8 0 TRUNK O 0.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		CFM	PRESS.	DUCT	DUCT			(fVmin)			_		DUCT	DUCT		E)	(min)	CFA	_		_	-		(fVmir
TRUNK B 457 0.07 10.8 14 x 8 588 TRUNK H 0 0.00 0 0 x 8 0 TRUNK P 0 0.05 0 TRUNK P 0 0.05 0 TRUNK P 0 0.05 0 0 0 x 8 0 TRUNK P 0 0.00 0 0 0 x 8 0 TRUNK P 0 0.00 0 0 0 0 x 8 0 TRUNK P 0 0.00 0 0 0 x 8 0 TRUNK P 0 0.00 0 0 0 x 8 0 TRUNK P 0 0.00 0 0 0 x 8 0 TRUNK P 0 0.00 0 0 0 x 8 0 TRUNK P 0 0.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TRUNK A	311	0.07	9.4	9	×	œ	260	표				0	0	×		-					×	ω	0
TRUNK C 361 0.08 9.6 10 x 8 650 TRUNK I 0 0.00 0 0 x 8 0 TRUNK O 0.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TRUNK B	457	0.07	10.8	4	×	œ	588	Ŧ				0	0	×		<u>.</u>						80	0
TRUNK F 0 0.000 0 0 0 X 8 8 0 TRUNK J 0 0.000 0 0 X 8 0 TRUNK R 0 0.000 0 0 0 X 8 0 TRUNK R 0 0.000 0 0 0 X 8 0 TRUNK R 0 0.000 0 0 X 8 0 TRUNK R 0 0.000 0 0 X 8 0 TRUNK R 0 0.000 0 0 X 8 0 TRUNK R 0 0.000 0 0 X 8 0 TRUNK R 0 0.000 0 0 X 8 0 TRUNK R 0 0.000 0 0 X 8 0 TRUNK R 0 0.000 0 0 X 8 0 TRUNK R 0 0.000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TRUNK C	361	90.0	9.6	9	×	œ	650	F				0	0	×		•						8	0
TRUNK E 0 0.00 0 0 0 x 8 0 TRUNK K 0 0.00 0 0 x 8 0 TRUNK D 0.00 0 0 0 x 8 0 TRUNK D 0.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TRUNK D	0	0.00	0	0	×	æ	0	Ė				0	0	×								80	0
TRUNK F 0 0.000 0 0 x 8 0 TRUNK L 0 0.000 0 0 x 8 0 TRUNK T 0 0.05 0 1 2 3 4 5 TRUNK V 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TRUNK E	0	0.00	0	0	×	ထ	0	Ŧ				0	0	×		÷						80	0
1 2 3 4 5 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TRUNK F	0	0.00	0	0	×	8	0	±				0	0	×		·					×	œ	0
1 2 3 4 5 F F F F F F F F F F F F F F F F F F																	TR						80	0
1 2 3 4 5 FINDINK W 0 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0																	Ę						œ	0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RETURN AIR #	-	7	က	4	2										_	ŕ						œ	0
95 115 75 75 340 0 0 0 0 0 0 0 0 0 0 0 120 TRUNKY 415 0.05 11.3 (1.6 4.7 5 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.		0	0	0	0	0	0									0	포						80	615
THE 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15	AIR VOLUME	92	115	22	75	340	0										÷						80	534
H. 64 47 56 55 21 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15										-						80	0
TITH 205 165 245 175 150 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ACTUAL DUCT LGH.	64	47	26	22	77	-																10	492
LH 269 212 301 230 171 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	EQUIVALENT LENGTH	202	165	242	175	120	0										45							
URE 0.06 0.07 0.05 0.06 0.09 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 14.80 1	TOTAL EFFECTIVE LH	569	212	301	230	171	_										- 23							
6.2 6.5 6 5.7 9.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ADJUSTED PRESSURE	90.0	0.07	0.05	90.0	0.09	14.80			_	_	_	_	_	· _	_	60							
8 8 8 8 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ROUND DUCT SIZE	6.2	6.5	9	2.2	9.1	0										7.7							
7 X X X X X X X X X X X X X X X X X X X	INLET GRILL SIZE	œ	œ	œ	80	9	0																	
14 14 14 14 30 0 0 0 0 0 0 0 0 0		×	×	×	×	×	×										_ ×							
	INLET GRILL SIZE	14	14	14	14	99	0									l	4							



MICHAEL O'ROURKE



TYPE:

2009 END

SITE NAME:

CENTREFIELD (WEST GORMLEY)

LO# 87536

R	ESIDENTIAL MECHANICAL VEN	NTILATION DESIGN SUMMARY	
COMBUSTION APPLIANCES	9.32.3.1(1)	SUPPLEMENTAL VENTILATION CAPACITY	
a) Direct vent (sealed combustion) only		Total Ventilation Capacity	_

'1	3.02	2.5.5.
a) V Direct vent (sealed combustion) only	Total Ventilation Capacity <u>137.8</u> cfm	
b) Positive venting induced draft (except fireplaces)	Less Principal Ventil. Capacity <u>63.6</u> cfm	
c) Natural draft, B-vent or induced draft gas fireplace	Required Supplemental Capacity 74.2 cfm	
d) Solid Fuel (including fireplaces)		
	PRINCIPAL EXHAUST FAN CAPACITY	
e)No Combustion Appliances	Model: VANEE 65H Location: BSMT	
HEATING SYSTEM		
	63.6 cfm	bevc
Forced Air Non Forced Air	PRINCIPAL EXHAUST HEAT LOSS CALCULATION CFM	
Electric Space Heat	CFM	
	SUPPLEMENTAL FANS BY INSTALLING CONTRACTOR	
HOUSE TYPE 9.32.1(2)	Location Model cfm HVI Sones	3
HOUSE TYPE 9.32.1(2)	ENS BY INSTALLING CONTRACTOR 50 \(\sqrt{3.5} \) BATH BY INSTALLING CONTRACTOR 50 \(\sqrt{3.5} \)	
✓ I Type a) or b) appliance only, no solid fuel	BATH BY INSTALLING CONTRACTOR 50 ✓ 3.5 PWD BY INSTALLING CONTRACTOR 50 ✓ 3.5	
	B-BATH BY INSTALLING CONTRACTOR 50 ✓ 3.5	_
II Type I except with solid fuel (including fireplaces)	HEAT RECOVERY VENTILATOR 9.32.3	
III Any Type c) appliance	HEAT RECOVERY VENTILATOR 9.32.3 Model: VANEE 65H	3.11.
	155 cfm high 64 cfm low	<u>_</u>
IV Type I, or II with electric space heat		
Other: Type I, II or IV no forced air	75 % Sensible Efficiency ✓ HVI Appro @ 32 deg F (0 deg C)	ved
SYSTEM DESIGN OPTIONS O.N.H.W.P.	LOCATION OF INSTALLATION	
O.N.H.W.P.	Lot: Concession	
1 Exhaust only/Forced Air System	Concession	_
2 HRV with Ducting/Forced Air System	Township Plan:	
	Address	
3 HRV Simplified/connected to forced air system	Roll # Building Permit #	
4 HRV with Ducting/non forced air system	BUILDER: ROYAL PINE HOMES	\equiv
Part 6 Design		
	Name:	_
TOTAL VENTILATION CAPACITY 9.32.3.3(1)	Address:	
Basement + Master Bedroom 2 @ 21.2 cfm 42.4 cfm	City:	
Other Bedrooms @ 10.6 cfm 21.2 cfm	Telephone #: Richmond Hill City of Richmond Hill	
	Building Division	
Kitchen & Bathrooms 5 @ 10.6 cfm 53 cfm	INSTALLING CONTRACTOR HVAC REVIEWED	
Other Rooms <u>2</u> @ 10.6 cfm <u>21.2</u> cfm	Name:	_
Table 9.32,3,A. TOTAL <u>137.8</u> cfm	Address: PXV	
	initials:	
RINCIPAL VENTILATION CAPACITY REQUIRED 9.32.3.4.(1)		\dashv
1 Bedroom 31.8 cfm	Telephone #: Fax #:	
1 Bedroom 31.8 cfm	DESIGNER CERTIFICATION	_
2 Bedroom 47.7 cfm	I hereby certify that this ventilation system has been designed	
3 Bedroom 63.6 cfm	in accordance with the Ontario Building Code. Name: HVAC Designs Ltd.	
4 Bedroom 79.5 cfm	Signature: Metal Okante.	
5 Bedroom 95.4 cfm	HRAI# 001820	
TOTAL		\dashv
TOTAL 63.6 cfm I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPRO	Date: September-21 OPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.	
INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE		



00000			Forn	Formula Sheet (For Air Leakage / Ventiliation Calculation)	akage / Ventiliation (alculation)				
LO#: 87536		Model: 2009 END		Builde	Builder: ROYAL PINE HOMES				Date: 9/	Date: 9/10/2021
		Volume Calculation	uc.				Air Change & Delta T Data	ta T Data		
House Volume						WINTER NAT	WINTER NATURAL AIR CHANGE RATE	SE RATE	0.284	
Floor Area (ft²)	rea (ft²) 4	Floor Height (ft) 10	Volume (ft³) 7540			SUMMER NA	SUMMER NATURAL AIR CHANGE RATE	GE RATE	0.086	
First 754	14	10	7615.4	T 1						
954	4	6	8586				Design Te	Design Temperature Difference	rence	
0 0		6	0				Tin °C	Tout °C	∆T °C	AT °F
0		6	0			Winter DTDh	22	-21	43	78
		Total:	23,741.4 ft³			Summer DTDc	24	31	7	13
			11100000	7	W					
	5.2.3	5.2.3.1 Heat Loss due to Air Leakage	ir Leakage			6.2.6 S	6.2.6 Sensible Gain due to Air Leakage	to Air Leakage		
Н	$AL_{airb} =$	$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$	$0TD_h \times 1.2$	·	4	$HG_{salb} = LR_{atrc} \times \frac{V_b}{2 \cdot c} \times DTD_c \times 1.2$	$\frac{V_b}{2c} \times DTD_c$	× 1.2		
*	186.74	x 43 °C	x 1.2	= 2746 W	= 0.086	x 186.74	3.0 x 7°C	x 1.2	"	137 W
				= 9370 Btu/h					"	467 Btu/h
	5.2.3.2 Hea	5.2.3.2 Heat Loss due to Mechanical Ventilation	nical Ventilation			6.2.7 Sen	6.2.7 Sensible heat Gain due to Ventilation	ue to Ventilatior		
H	$L_{vairb} =$	$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$	$1.08 \times (1-E)$		TH	$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$	$^{r}D_{h} \times 1.08 \times 0$	(1-E)		
*	78 °F	× 1.08	× 0.25	= 1336 Btu/h	64 CFM	. x 13 °F	× 1.08	x 0.25	"	220 Btu/h
			5.2.3.3 Calcula	5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)	Loss for Each Room (Floo	or Multiplier Section)				
		HL_{lpha}	$_{irr} = Level Fact$	$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$	$L_{agcr} + HL_{bgcr}$ \Rightarrow	$(HL_{agclevel} + HL_{bg})$	gclevel)}			
		Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Air Leakage Heat Loss Multiplier (LF x Loss: (HL _{devel})	Air Leakage Heat Loss Multi HLairbv / HLlevel)	s Multiplier (LF x Llevel)			
		1	0.5		5,598	0.837	7			
		2	0.3		650′6	0.310	0			
		. 3	0.2	9,370	7,698	0.243	3			
		4 0	0		0 0	00:00				
		*HLairbv = A	*HLairbv = Air leakage heat loss + ventilation heat loss	*HLairbv = Air leakage heat loss + ventilation heat loss						



375 Finley Ave. Suite 202 Ajax, ON L1S 2E2 Tel: 905.619.2300 Fax: 905.619.2375

Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

HEAT LOSS AND GAIN SUMMARY SHEET

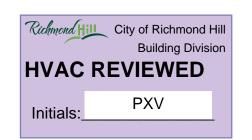
MODEL: 2009 END SFQT: 1700	LO# 87536	BUILDER: ROYAL PINE HOMES SITE: CENTREFIELD (WEST	
DESIGN ASSUMPTIONS			
HEATING OUTDOOR DESIGN TEMP. INDOOR DESIGN TEMP. BUILDING DATA	°F -6 72	COOLING OUTDOOR DESIGN TEMP. INDOOR DESIGN TEMP. (MAX 75°F)	°F 88 75
ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Υ
AIR CHANGES PER HOUR:	3.00	ASSUMED (Y/N):	Υ
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Υ
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Υ
HOUSE VOLUME (ft³):	23741.4	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Bto	u/h/ft²): 1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATIO	N BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 52.0 ft	WIDTH: 20.0 ft	EXPOSED PERIMETER:	112.0 ft

2012 OBC - COMPLIANCE PACKAGE		
Component	Compliance SB-12 PERI	Package FORMANCE
Ceiling with Attic Space Minimum RSI (R)-Value Ceiling Without Attic Space Minimum RSI (R)-Value Exposed Floor Minimum RSI (R)-Value Walls Above Grade Minimum RSI (R)-Value Basement Walls Minimum RSI (R)-Value Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value Windows and Sliding Glass Doors Maximum U-Value Skylights Maximum U-Value Space Heating Equipment Minimum AFUE HRV Minimum Efficiency	Nominal 60 31 31 22+1.5 20 - 10 10 1.6 2.6 0.96 75%	Min. Eff. 59.20 27.70 29.80 18.50 21.12 - 10 11.13
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE







HVAC Designs Ltd. 375 Finley Ave, Suite 202 Ajax ON, L1S 2E2 905-619-2300

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Wea	ther Sta	ation Description
Province:	Ontario	
Region:	Richmor	nd Hill
	Site D	Description
Soil Conductivity:	Normal	conductivity: dry sand, loam, clay
Water Table:	Normal	(7-10 m, 23-33 ft)
Fo	oundatic	on Dimensions
Floor Length (m):	15.8	
Floor Width (m):	6.1	
Exposed Perimeter (m):	34.1	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	Insulation Configuration
Window Area (m²):	0.9	
Door Area (m²):	1.9	
	Radi	ant Slab
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
	Desig	n Months
Heating Month	1	
	Founda	ation Loads
Heating Load (Watts):		1062

TYPE: 2009 END **LO#** 87536

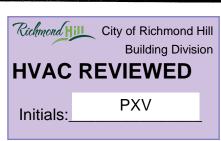


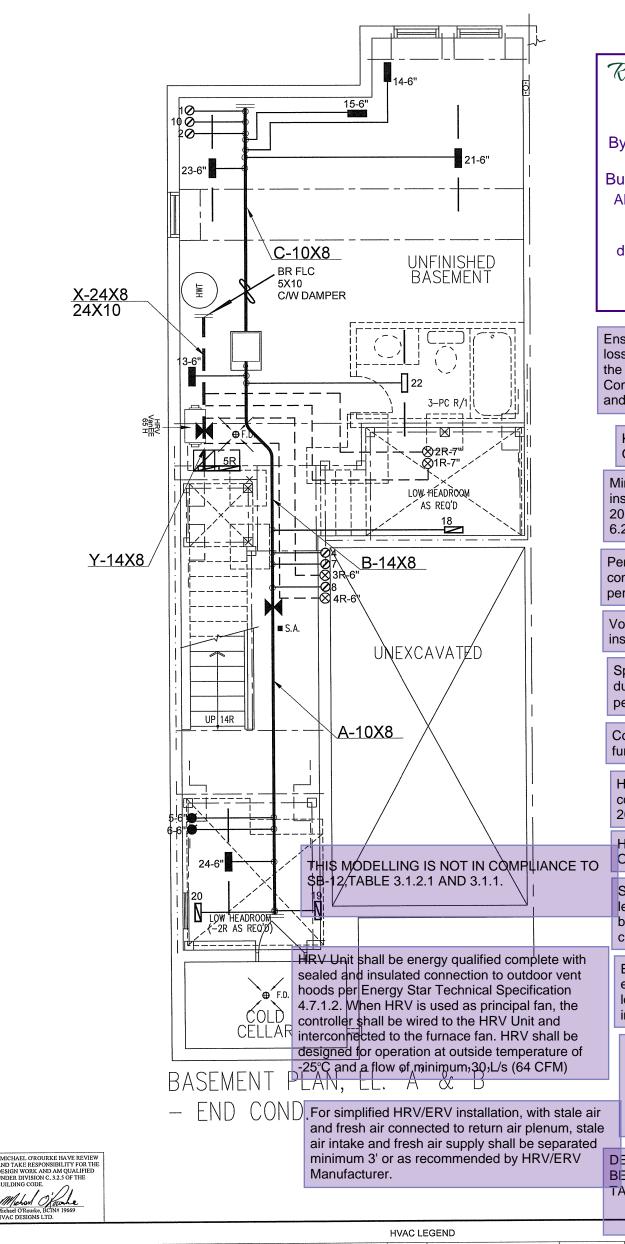
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Statio	n Des	script	ion		
Province:	Onta	rio	***************************************		
Region:	Richr	nond I	Hill		
Weather Station Location:	Oper	flat te	errain, g	grass	
Anemometer height (m):	10				
Local Sh	ieldin	g			
Building Site:	Subu	rban, f	orest		
Walls:	Heav	У			
Flue:	Heav	У			
Highest Ceiling Height (m):	6.74				
Building Cor	nfigur	ation			
Type:	Semi				
Number of Stories:	Two				
Foundation:	Full				
House Volume (m³):	672.3	}			
Air Leakage/	Venti	latio	า		
Air Tightness Type:	Energ	gy Star	Attach	ed (3.0	ACH)
Custom BDT Data:	ELA @	9 10 P	a.		753.1 cm ²
	3.00	/			ACH @ 50 Pa
Mechanical Ventilation (L/s):	To	tal Sup	ply		Total Exhaust
		30.0			30.0
Flue	Size				
Flue #:	#1	#2	#3	#4	
Diameter (mm):	0	0	0	0	
Natural Infilt	ation	Rate	es		
Heating Air Leakage Rate (ACH/H):		C).28	4	
Cooling Air Leakage Rate (ACH/H):		C	0.08	6	

TYPE: 2009 END **LO#** 87536





Richmond Hill

City of Richmond Hill **Building Division**

REVIEWED

By: PxV

Date: Oct/05/2021

Building Permit #: **BP#-2021-50776**

All construction shall comply with the Ontario Building Code and all other applicable statutory regulations. The reviewed documents must be kept on site at all times.

Building inspection line: 905-771-5465 (24 hr) buildinginspections@richmondhill.ca Building inquiry line 905-771-8810 building@richmondhill.ca

Ensure that R-Values and U-Values used for heat loss and heat gain calculations are consistent with the values specified by SB-12 Performance Energy modeling and De Compliance: and the values used for architectural design.

Kitchen hood exhaust duct shall be provided as per OBC 2012, Div.B 9.32.3.10, 9.32.3.5(2).

Minimum R-12 Insulation Value required for ducts installed at unheated or exposed condition (OBC 2012 Div.B 6.2.4.3(10) and seal the ducts as per 6.2.4.3(11) & HRAI Digest 2005, Clause 4.5.

Penetration of Air Barrier System by ducts, wires, conduits or building materials shall be sealed as per OBC 2012, Div.B 9.25.3.3.(9) & (10).

Volume control dampers to all branches to be installed per OBC 2012, Div.B, 6.2.4.5.

Space between studs and joists used as return ducts shall be separated from unused portion as per OBC 2012 Div.B 6.2.4.7(6)

Combustion air supply shall be provided to the furnace and hot water tank.

HRV installation, testing, startup and commissioning shall be in compliance with OBC 2012, Div.B 9.32.3.11, 9.32.3.11(7)&(10)

HRV duct connection shall be in compliance with OBC 2012 Div.B 9.32.3.6(3) & 9.32.3.4(7)

Supply air grill at finished basement shall be at low level. Return air grill for finished or unfinished basement shall be at low level. HRAI digest 2005, clause 7.7(3).

Exterior insulation effective R-Value for wall, roof or exposed floor shall be maintained at the respective location where duct or sanitary pipes are routed inside exterior envelope.

Return air intake shall be provided as recommended in HRAI Digest 2005 Section 4.7 Return air inlet should be positioned so that short circuiting of supply air is avoided. A high and low wall return air combination shall be provided when a combined cooling & heating system is installed.

DEPRESSURIZATION TEST REQUIRED BEFORE FINAL OCCUPANCY STAGE TO TARGETTED ACH

3 ach

				HVAC LE	EGEND			3.	REVISED ACH	SEPT/2021
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	×	RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE	ø	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	X	REDUCER		REVISIONS	

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DESIGNS

ROYAL PINE HOMES

Project Name

2009 END

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

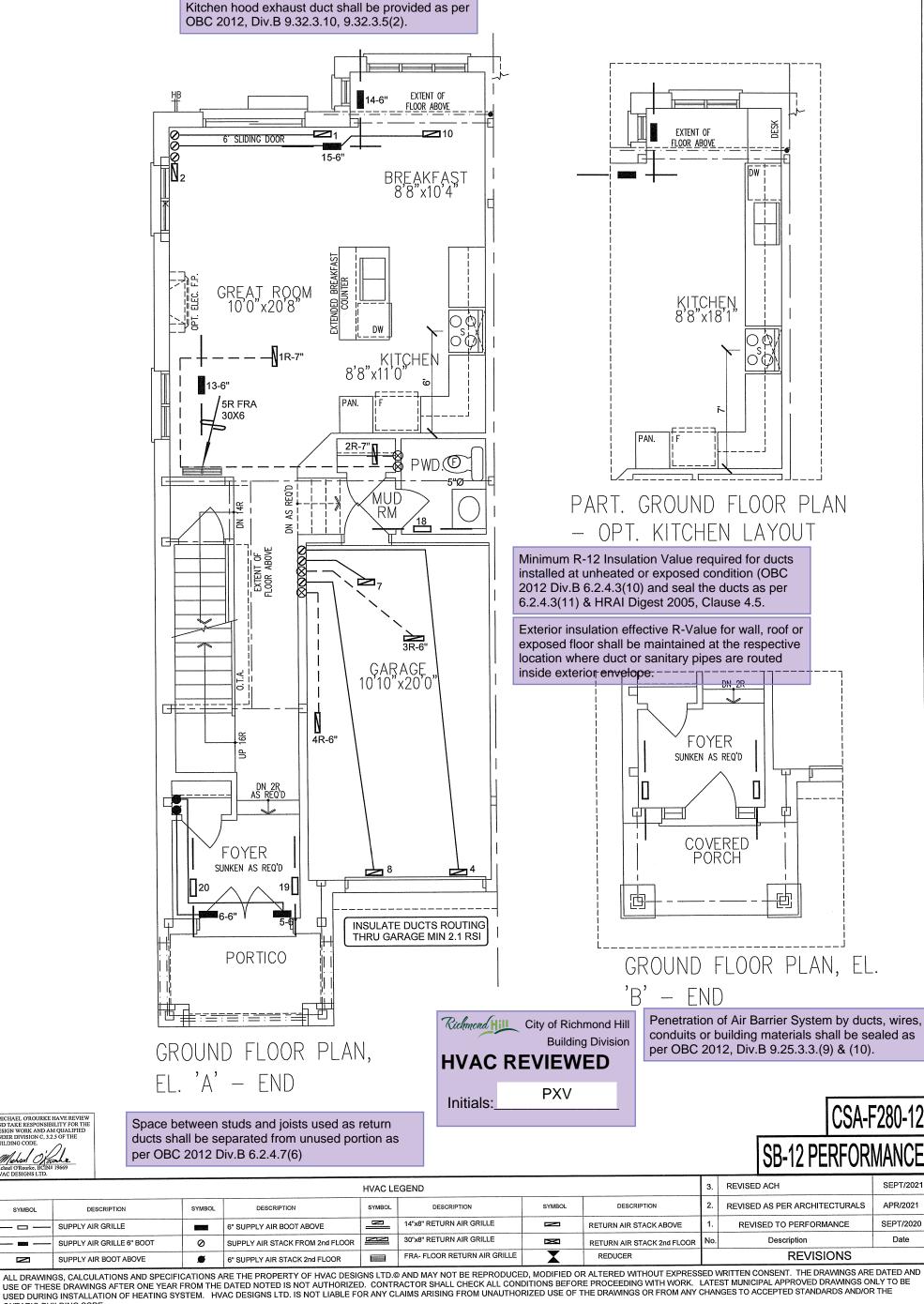
1700 sqft

375 Finley Ave. Suite 202 - Ajax, Ontario

Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services

Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

HEAT LO	OSS 33678	BTU/H	# OF RUNS	S/A	R/A	FANS		
	UNIT DATA		3RD FLOOR				BA	SEMENT
MAKE	CARRIER		2ND FLOOR	8	4	2	Н	EATING
MODEL	N6A-060-14\	,	1ST FLOOR	6	1	2	L	AYOUT
INPUT	NOA-000-14V				-		Date C	SEPT/2020
	60	MBTU/H	BASEMENT	3	1	0		3/16" = 1'-0"
OUTPUT	58	MBTU/H	ALL S/A DIFFU				Scale 3	3/16" = 1-0
COOLING		TONS	UNLESS NOTE ON LAYOUT. A				В	CIN# 19669
	2.0	, -, -	UNLESS NOTE			ISE	10#	07526
FAN SPEED	820	cfm @ 0.6" w.c.	ON LAYOUT. U DOORS 1" min.				LO#	87536



SUPPLY AIR GRILLE SUPPLY AIR GRILLE 6" BOOT SUPPLY AIR BOOT ABOVE

ONTARIO BUILDING CODE

ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca

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FIRST FLOOR

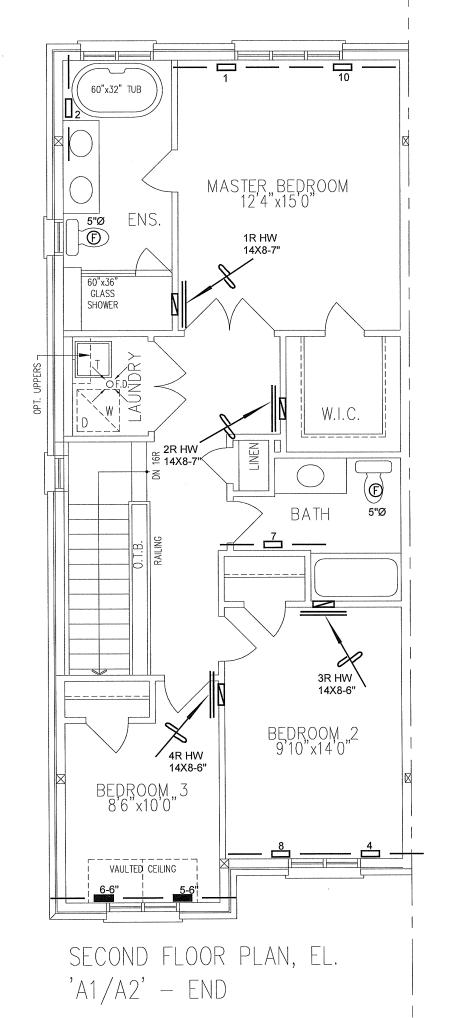
HEATING LAYOUT

SEPT/2020 3/16" = 1'-0"

BCIN# 19669

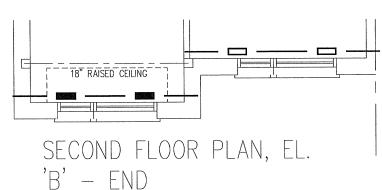
87536 LO#

1700 sqft 2009 END



Space between studs and joists used as return ducts shall be separated from unused portion as per OBC 2012 Div.B 6.2.4.7(6)

Return air intake shall be provided as recommended in HRAI Digest 2005 Section 4.7 Return air inlet should be positioned so that short circuiting of supply air is avoided. A high and low wall return air combination shall be provided when a combined cooling & heating system is installed.



CSA-F280-12

SB-12 PERFORMANCE

HVAC DESIGNS LTD.											
				HVAC LE	EGEND	*		3.	REVISED	ACH	SEPT/2021
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED	AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVIS	SED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	×	RETURN AIR STACK 2nd FLOOR	No.		Description	Date
	SUPPLY AIR BOOT ABOVE	.5	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	X	REDUCER			REVISIONS	

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.® AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Client

ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO

HVA DESIGNS LTD.

375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca

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Sheet Title

SECOND FLOOR HEATING LAYOUT

Date SEPT/2020 Scale 3/16" = 1'-0"

BCIN# 19669

LO# 87536

2009 END

1700 sqft

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information		1 mar. 10		1212	
Building number, street name			Unit	no.	Lot/con.
Municipality	Postal code	Plan number/ other des	cription		
RICHMOND HILL			·		
B. Individual who reviews and	l takes responsibility f	or design activities		7.5	
Name MICHAEL O'ROURKE		Firm			
Street address		HVAC DESIGNS LTD.	lu-a		
375 FINLEY AVE			Unit no. 202		Lot/con. N/A
Municipality	Postal code	Province	E-mail		IWA
AJAX	L1S 2E2	ONTARIO	info@hvacdesigns.d	ca	
Telephone number (905) 619-2300	Fax number		Cell number		
	(905) 619-2375		()		
C. Design activities undertake	n by individual identifi	ed in Section B. [Build	ling Code Table 3.5	.2.1 OF Divis	sion C]
☐ House					
☐ Small Buildings		C – House ng Services	☐ Build	ing Structur	al
☐ Large Buildings	☐ Detect	tion, Lighting and Pov	ver ☐ Plum	bing – Hous bing – All B	se uildinas
☐ Complex Buildings	☐ Fire P	rotection	☐ On-s	ite Sewage	Systems
Description of designer's work HEAT LOSS / GAIN CALCULATION	ue	Model:	2009 END		
DUCT SIZING	43		FIN BSMT		
RESIDENTIAL MECHANICAL VEN	TILATION DESIGN SUMM	IARY Designation			
RESIDENTIAL SYSTEM DESIGN po	er CSA-F280-12	Project:	CENTREFIELD (WEST	GORMLEY)	
D. Declaration of Designer		45.00			
I MICHAEL O'ROU			declare that (cho	ose one as an	propriate).
	(print name)				p p
☐ I review and take respons	sibility for the design work	on behalf of a firm register	ed under subsection 3.	2.4.of	
classes/categories.	g Code. I am qualified, and	the firm is registered, in the		appropriate	
la Esta a Box			Ri	chmond Hill	City of Richmond H
Individual BCI Firm BCIN:	N:				Building Divisi
			LI'	VAC D	EVIEWED
I review and take respons designer" under subse	sibility for the design and a ction 3.2.5.of Di	m qualified in the appropri on C, of the Building Code.	ate category as an oth	A A C I	
		on o, or the ballang code.			PXV
Individual BCI Basis for exen	N: <u>19669</u> nption from registration and	d qualification:	O.B.C SENTENCE	itials:	
☐ The design work is exemp		-	GIBIO OLIVIENOL	. J.Z.T. 1	4)
	registration and qualification	ion and qualification requir on:	ements of the Building	Code.	
certify that:	·				
certify triat.					
 The information conta I have submitted this 	ained in this schedu application with the knowle	ule is true to the best of my	v knowledge. m.		
				34/21	
September 10, 2021			Michael C.	fourte	-
Date			Sig	nature of Desi	gner
OTC.					

1. For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d).of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.

2. Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2 Tel: 905.619.2300 Fax: 905.619.2375 Web: www.tvacdesigns.ca E-mail: info@hvacdesigns.ca

H\\/\A\DESIGNS\un.

TOTAL COMBINED HEAT LOSS BTU/H: 33678

HEAT GAIN AT °F. 13 SB-12 PERFORMANCE B-BATH	0	10	-	LOSS GAIN	•	۰ ،	0 (-	, ,		0	•	0 0	.	0	289		0.50 0.84	241	-	· •	0	•	630	0		112				0	3 9 0 8		•	70	336	•	•	•]		0.50 0.8	4444		•	•		9753
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I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

H/V/A/DESIGNSLTD.

MICHAEL O'ROURKE

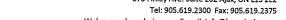
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	io io	plenum max s/a c	min adjusted	7	BATH	0.32	9 5	<u> </u>	0.17	စ္က	40	170	0.1	4	92	34	3X10	В	
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NAME: CENTREFIELD (WES)	₹	3rd 0	otherwis	2 2	N T	<u>6</u> 8	3 5	26	0.17	38	120	208	0.08	4	447	298	3X10	٥	
SITE NAME: CENTREFIELD (WEST GORMLEY) BUILDER: ROYAL PINE HOMES	820 32,342 25.35	0 0 th	ess noted ed otherv	- i	X 6	23.0	9 6	9	0.17	78	110	138	0.12	2	169	470	3X10	٥	
SITI	HEATING CFM TOTAL HEAT LOSS ? FLOW RATE CFM	F	"x10" uni	# KON #	ROOM NAME	USO MENT	RM GAIN MBH	COOLING	RESSURE	UCT LGH.	LENGTH	LENGTH	RESSURE	ROUND DUCT SIZE	TY (ff/min)	TY (ff/min)	RILL SIZE	TRUNK	
	HEATING CFM TOTAL HEAT LOSS AIR FLOW RATE CFM	RUN COUNT S/A R/A	All S/A diffusers 4"x10" unless noted otherwise on layou All S/A runs 5"Ø unless noted otherwise on layout.	Č	DY NA	CFM PER RUN HEAT	RMG	CFM PER RUN COOLING	ADJUSTED PRESSURE	ACTUAL DUCT LGH	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	ROUND	HEATING VELOCITY (fVmin)	COOLING VELOCITY (fl/min)	OUTLET GRILL SIZE		
	₹		All S/A					CFM	Ρ		ш	TOTAL	8		HEATIN	¥∏000 —			

RUN #	ROOM NAME	RM LOSS MBH.	CFM PER RUN HEAT	RM GAIN MBH.	CFM PER RUN COOLING	ADJUSTED PRESSURE	ACTUAL DUCT LGH.	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	ROUND DUCT SIZE	HEATING VELOCITY (fl/min)	COOLING VELOCITY (fl/min)	OUTLET GRILL SIZE	TRUNK	

SUPPLY AIR TRUNK SIZE	
TRUNK	
OUTLET GRILL SIZE	
COOLING VELOCITY (fl/min)	

SUPPLY AIR TRUNK SIZE																	RETURN AIR TRIINK SIZE	TRIINK	SIZE					
	TRUNK	STATIC	ROUND	RECT			VELOCITY			TRUNK	STATIC	ROUND	RECT		-			RINK	STATIC	CNIC	TOTA		-	71.00
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ADJUSTED PRESSURE	90.0	0.0	0.05	90.0	0.0	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	_	14.80	. 6								
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TYPE: SITE NAME: 2009 END

CENTREFIELD (WEST GORMLEY)

LO#

87537

WEST GORMLEY) FIN BSMT
RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES	9.32.3.1(1)	SUPPLEMENTAL VENT	FILATION CAPACITY		9.32.3.5.
a) Direct vent (sealed combustion) only		Total Ventilation Capacit	y	148.4	_ cfm
b) Positive venting induced draft (except fireplaces)		Less Principal Ventil. Ca	pacity	63.6	cfm
c) Natural draft, B-vent or induced draft gas fireplace		Required Supplemental (Capacity	84.8	_ cfm
d) Solid Fuel (including fireplaces)					
e) No Combustion Appliances		PRINCIPAL EXHAUST I	FAN CAPACITY		
		Model:	VANEE 65H	Location:	BSMT
HEATING SYSTEM		63.6 cfr	m		✓ HVI Approved
Forced Air Non Forced Air			HEAT LOSS CALCULATION		
		63.6 CFM	ΔΤ*F < 78 F X	FACTOR 1.08	% LOSS X 0.25
Electric Space Heat		SUPPLEMENTAL FANS	BY INST	ALLING CON	TRACTOR
HOUGE TYPE		Location	Model	cfm	HVI Sones
HOUSE TYPE	9.32.1(2)		BY INSTALLING CONTRACTOR	50	✓ 3.5
I Type a) or b) appliance only, no solid fuel		BATH PWD	BY INSTALLING CONTRACTOR BY INSTALLING CONTRACTOR	50 50	✓ 3.5 ✓ 3.5
		B-BATH	BY INSTALLING CONTRACTOR	50	✓ 3.5
II Type I except with solid fuel (including fireplaces)				
III Any Type c) appliance		HEAT RECOVERY VEN Model:	TILATOR VANEE 65H		9.32.3.11.
IV Type I, or II with electric space heat		155	cfm high	64	cfm low
		75	% Sensible Efficiency		✓ HVI Approved
Other: Type I, II or IV no forced air			@ 32 deg F (0 deg C)		
SVSTEM DESIGN ORTIONS	0.111111	LOCATION OF INSTALL	-ATION		
SYSTEM DESIGN OPTIONS	O.N.H.W.P.	Lot:		Concession	
1 Exhaust only/Forced Air System		Township		Plan:	
2 HRV with Ducting/Forced Air System				riait.	
HRV Simplified/connected to forced air system		Address			
4 HRV with Ducting/non forced air system		Roll#	- Richmond	Building Per	thmond Hill
Part 6 Design		BUILDER:	ROYAL PINÉ HOMES	Build	ding Division
		Name:	HVAC RE	EVIE	NED
TOTAL VENTILATION CAPACITY	9.32.3.3(1)	Address:		5 \4	,
Basement + Master Bedroom 2 @ 21.2 cfm 42.4	cfm	City:	Initials:	PXV	
Other Bedrooms 2 @ 10.6 cfm 21.2	cfm	Telephone #:		Fax#:	
Kitchen & Bathrooms 6 @ 10.6 cfm 63.6	cfm	INSTALLING CONTRAC			
	•		TOR		
	. cfm	Name:			
Table 9.32.3.A. TOTAL <u>148.4</u>	. cfm	Address:			
PRINCIPAL VENTILATION CAPACITY REQUIRED	9.32.3.4.(1)	City:			
	1	Telephone #:		Fax #:	
1 Bedroom 31.8	cfm	DESIGNER CERTIFICAT	ION		
2 Bedroom 47.7	cfm		entilation system has been de	signed	
3 Bedroom 63.6	cfm	Name:	HVAC Designs Ltd.		
4 Bedroom 79.5	cfm	Signature:	Michan	Ofmhe	·•
5 Bedroom 95.4	cfm	HRAI#		001820	
TOTAL 63.6 cfm		Date:	Se	eptember-21	
I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUA INDIVIDUAL BCIN: 19669 MICHAEL O'RO Mahad Offine.		'RUPRIATE CATEGORY AS AN "OTH!	EK DESIGNER" UNDER DIVISION C, 3	3.2.5 OF THE BUIL	DING CODE.

Control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the cont	LO#: 87537 Model: 2009 END Nolume Calculation Nolume Calculation Nolume Calculation 154 10 10 10 10 10 10 10 1			l'ordation)		
Volume Chiculation	Floor Area (ft²) Floor Height (ft) T54 10 10 10 10 10 10 10 1	Build	er: ROYAL PINE HOMES			
Floor Area (FT) Floor Height (FT) Volume (FT) 754	Floor Area (ft²) Floor Height (ft) T54 10 10 10 10 10 10 10 1			Air Change & Delta T		: 9/10/2021
Floor Area (FF) Floor Height (FF) Volume (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Flore Heat Loss due to March Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Flore Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor Height (FF) Floor He	Floor Area (ft²) Floor Height (ft) 754 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10	ſ			200	
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1	954 9 9 9 9 9 9 9 9 9					
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Total: 23,341,4 RP Summer DTOC 24 34 44 7	Total: Total: 5.2.3.1 Heat Loss due to Air Lea $HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_p$ $\times 186.74 \times 43^{\circ}C \times 186.74 \times 43^{\circ}C \times 186.74 \times 108^{\circ}C$ 5.2.3.2 Heat Loss due to Mechanical Variable $HL_{vairb} = PVC \times DTD_h \times 1.08 \times 108^{\circ}C$				lout 'C AT 'C	ΔT °F
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$5.2.3.1$ Heat Loss due to Air Lea $HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_p$ $\times 186.74 \times 43^{\circ}C \times 186.74 \times 43^{\circ}C \times 186.74 \times 108^{\circ}C \times 186.74 \times 108^{\circ}C \times 186.74 \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 108^{\circ}C \times 10$	11-	-101		+	13
$H_{ditp} = LR_{atrh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2 \\ \times \frac{136.74}{3.6} \times \frac{V_b}{43.7} \times \frac{V_b}{43.6} \times \frac{V_b}{43$	$5.2.3.1$ Heat Loss due to Air Lea $HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_p$ $\times 186.74 \times 43^{\circ}C \times 186.74 \times 43^{\circ}C \times 186.74 \times 186.74 \times 196.74 \times 196.74 \times 196.74 \times 108$ $5.2.3.2$ Heat Loss due to Mechanical Variable $HL_{vairb} = PVC \times DTD_h \times 1.08$	7				
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_b \times 1.2$ $\times 186.74 \times 43^{\circ}C \times 1.2$ $= 9370 \text{ Btu/h}$ $5.2.3.2 \text{ Heat Loss due to Mechanical Ventilation}$ $HL_{vairb} = PVC \times DTD_b \times 1.08$ $\times 78^{\circ}F \times 1.08 \times (1 - E)$ $\times 78^{\circ}F \times 1.08 \times (1 - E)$ $\times 186.74 \times 4.08 \times (1 - E)$ $\times 186.74 \times 1.08 \times (1 - E)$ $\times 186.74 \times 1.08 \times (1 - E)$ $\times 186.74 \times 1.08 \times (1 - E)$ $\times 1.08 \times$	$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h$ $\times 186.74 \times 43^{\circ}C \times X$ $5.2.3.2 \text{ Heat Loss due to Mechanical V}$ $HL_{vairb} = PVC \times DTD_h \times 1.08$ $\times 78^{\circ}F \times 1.08$			6.2.6 Sensible Gain due to	Air Leakage	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	x 186.74 x $43 °C$ x)H	$V_{p,a,b} = I.R \times \frac{V_b}{V_b} \times DTD \times 1$,	
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1-E)$ $\times \begin{array}{cccccccccccccccccccccccccccccccccccc$	5.2.3.2 Heat Loss due to Mechanical v $HL_{vairb} = PVC \times DTD_h \times 1.08$		0.086	3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6		
5.2.3.2 Heat Loss due to Mechanical Ventilation 6.2.7 Sensible heat Gain due to Ventilation HLvairb = PVC × DTDh × 1.08 × (1 - E) $HL_{vairb} = PVC \times DTDh$ × 1.08 × (1 - E) A 78 °F = x 78 °F = x 78 °F = x 78 °F = x 1.08 x 0.25 = 1336 Btu/h = (4.6 °FM) × 13 °F = x 1.08 × (1 - E) A 108 x 1 - E Factor (LF) Layer Loss for Each Room (Floor Multiplier Section) x 13 °F = x 1.08 × (1 - E) x 0.25 = = (2.7 Sensible heat Gain due to Ventilation) A 108 x 1 - E Factor (LF) Layer Loss for Each Room (Floor Multiplier Section) x 13 °F = x 1.08 × (1 - E) x 0.25 = = (2.7 Sensible heat Gain due to Ventilation) A 108 HLaire All Leskage + Loss for Each Room (Floor Multiplier Section) x 10.8 × 0.25 = = (2.2 Sensible heat Loss Multiplier (LF × (HLagclevel.)) A 108 Layer Level Factor (LF) Layer HLaire All Leskage + (2.2 Sensible heat Loss Multiplier (LF × (HLagclevel.)) (3.10	5.2.3.2 Heat Loss due to Mechanical V $HL_{vairb} = PVC \times DTD_h \times 1.08$ × $\frac{78 ^{\circ} F}{}$ × $\frac{1.08}{}$ ×	l L				137 W
	5.2.3.2 Heat Loss due to Mechanical X HL $_{vairb}=PVC imes DTD_h imes 1.08$ $ imes$ $ im$				ıı	467 Btu/h
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1-E)$	$HL_{vairb} = PVC \times DTD_h \times 1.08$			6.2.7 Sensible heat Gain due t	o Ventilation	
	x 78°F x 1.08 x		$HL_{ u a}$	$_{tirb} = PVC \times DTD_h \times 1.08 \times (1 - 1)$	– E)	
$L_{airr} = Level\ Factor imes HL_{airbv} imes \{(H_{airr} = Level\ Factor (LF) imes Hairve Air Leakage + Level\ Factor (LF) imes Hairve Air Leakage + (Btu/h) imes 0.5 imes 0.3 imes 9,370 imes 0.2 imes 9,370 imes 0.2 imes 0.2 imes 0.3 imes 0.2 imes 0.3 imes 0.2 imes 0.3	5.2.3.3 Calculat	Ш	64 CFM	13 °F × 1.08	1	220 Btu/h
$L_{airr} = Level Factor \times HL_{airbv} \times \{(H)\}$ Level Factor (LF) Ventilation Heat Loss 0.5 0.5 0.3 0.2 0.2 0.2 0.2 0.3 0.2 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3		tion of Air Change Heat I	Loss for Each Room (Floor	Multiplier Section)		
Hairve Air Leakage + Level Factor (LF) Ventilation Heat Loss (Btu/h) 0.5 (Btu/h) 0.3 (0.2 (0.2 (0.2 (0.2 (0.2 (0.2 (0.2 (0.2	$HL_{atrr} = Level Facto$	$r \times HL_{airbv} \times \{(H)\}$	$L_{agcr} + HL_{bgcr}) \div (H)$	$\{H_{agclevel} + HL_{bgclevel}\}$		
0.5 5.598 0.3 9,059 0.2 9,370 7,698 0 0 0 0		HLairve Air Leakage + Ventilation Heat Loss	Level Conductive Heat A Loss: (HL _{clevel})	Nir Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)		
0.3 9,370 9,659 0 0 0 0 0 0			5,598	0.837		
0.2 9,370 7,698 0 0 0 0			650'6	0.310		
0 0		9,370	2,698	0.243		
0 0			0	0.000		
			0	0.000		



375 Finley Ave. Suite 202 Ajax, ON L1S 2E2

Tel: 905.619.2300 Fax: 905.619.2375

Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	2009 END		FIN BSMT	BUILDER: ROYAL PINE HOME	S
SFQT:	1700	LO#	87537	SITE: CENTREFIELD (WES	T GORMLEY)
DESIGN A	SSUMPTIONS				
	R DESIGN TEMP. DESIGN TEMP.		°F -6 72	COOLING OUTDOOR DESIGN TEMP. INDOOR DESIGN TEMP. (MAX 75°F)	°F 88 75
BUILDING	DATA				
ATTACHM	ENT:		ATTACHED	# OF STORIES (+BASEMENT):	3
FRONT FA	CES:		EAST	ASSUMED (Y/N):	Υ
AIR CHANG	GES PER HOUR:		3.00	ASSUMED (Y/N):	Υ
AIR TIGHTI	NESS CATEGORY:		TIGHT	ASSUMED (Y/N):	Υ
WIND EXP	OSURE:		SHELTERED	ASSUMED (Y/N):	Υ
HOUSE VO	LUME (ft³):	e.	23741.4	ASSUMED (Y/N):	Υ
INTERNAL	SHADING:	BLINDS	/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR L	.IGHTING LOAD (Btu/	/h/ft²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Υ
FOUNDATIO	ON CONFIGURATION		BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH:	52.0 ft	WIDTH:	20.0 ft	EXPOSED PERIMETER:	112.0 ft

2012 OBC - COMPLIANCE PACKAGE		
Component		e Package RFORMANCE
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
Basement Walls Minimum RSI (R)-Value	20	21.12
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value	-	21.12
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13
Windows and Sliding Glass Doors Maximum U-Value	1.6	11.15
Skylights Maximum U-Value		-
Space Heating Equipment Minimum AFUE	2.6	-
HRV Minimum Efficiency	0.96	-
Domestic Hot Water Heater Minimum EF	75%	-
Bornestic flot water neater ivillimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

Mehad Ofombe.



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

We	ather St	ation Description		
Province:	Ontario			
Region:	Richmo			
Call Call and the		Description		
Soil Conductivity:		conductivity: dry sand, loam	, clay	
Water Table:		(7-10 m, 23-33 ft)		
F	oundation	on Dimensions		
Floor Length (m):	15.8			
Floor Width (m):	6.1			
Exposed Perimeter (m):	34.1			
Wall Height (m):	3.0			
Depth Below Grade (m):	2.13	Insulation Cor	ofiguration	
Window Area (m²):	0.9			
Door Area (m²):	1.9			
	Radi	ant Slab		
Heated Fraction of the Slab:	0			
Fluid Temperature (°C):	33			
	Desig	n Months		
Heating Month	1			
	Founda	tion Loads		
Heating Load (Watts):		1062		f Richmond Hill uilding Division
TYPE: 2009 END LO# 87537		FIN BSMT	HVAC REVI	1



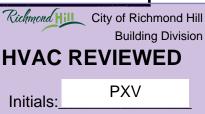
Air Infiltration Residential Load Calculator

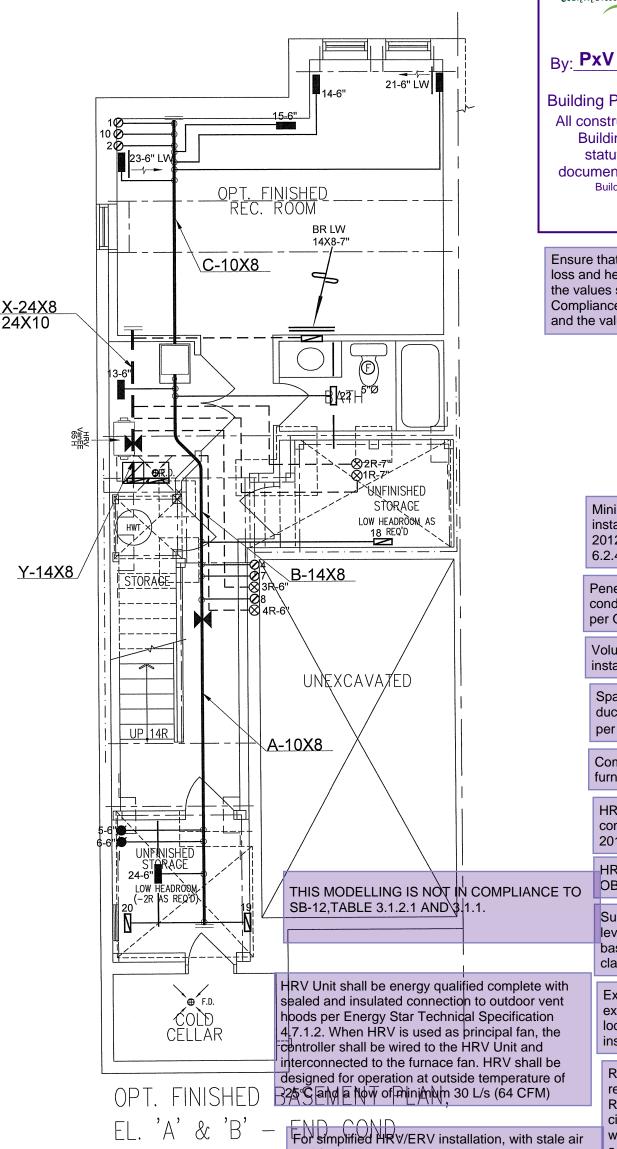
Supplemental tool for CAN/CSA-F280

Weather Sta	ition Des	cripti	on		
Province:	Ontar	io			
Region:	Richm	ond H	ill		
Weather Station Location:	Open	flat tei	rain, g	rass	
Anemometer height (m):	10				
Local	Shieldin	g			
Building Site:	Subur	ban, fo	rest		
Walls:	Heavy	•			
Flue:	Heavy	'			
Highest Ceiling Height (m):	6.74				
Building (Configura	ation			
Type:	Semi				
Number of Stories:	Two				
Foundation:	Full				
House Volume (m³):	672.3				
Air Leakag	ge/Ventil	ation			
Air Tightness Type:	Energ	y Star .	Attach	ed (3.0	ACH)
Custom BDT Data:	ELA @	10 Pa	ı.		753.1 cm²
	3.00				ACH @ 50 Pa
Mechanical Ventilation (L/s):	To	tal Sup	ply		Total Exhaust
		30.0			30.0
Flu	ue Size				
Flue #:	#1	#2	#3	#4	
Diameter (mm):	0	0	0	0	
Natural In	filtration	Rate	S		
Heating Air Leakage Rate (ACH/	н):	0	.28	4	
Cooling Air Leakage Rate (ACH/	H):	0	.08	6	

TYPE: 2009 END **LO#** 87537

FIN BSMT





Richmond Hill

City of Richmond Hill **Building Division**

REVIEWED

Date: Oct /06/2021

Building Permit #: **BP#-2021-50776**

All construction shall comply with the Ontario Building Code and all other applicable statutory regulations. The reviewed documents must be kept on site at all times.

> Building inspection line: 905-771-5465 (24 hr) buildinginspections@richmondhill.ca Building inquiry line 905-771-8810 building@richmondhill.ca

Ensure that R-Values and U-Values used for heat loss and heat gain calculations are consistent with the values specified by SB-12 Performance Compliance: Energy Modeling/de pressurization test and the values used for architectural design.

> Minimum R-12 Insulation Value required for ducts installed at unheated or exposed condition (OBC 2012 Div.B 6.2.4.3(10) and seal the ducts as per 6.2.4.3(11) & HRAI Digest 2005, Clause 4.5.

Penetration of Air Barrier System by ducts, wires, conduits or building materials shall be sealed as per OBC 2012, Div.B 9.25.3.3.(9) & (10).

Volume control dampers to all branches to be installed per OBC 2012, Div.B, 6.2.4.5.

Space between studs and joists used as return ducts shall be separated from unused portion as per OBC 2012 Div.B 6.2.4.7(6)

Combustion air supply shall be provided to the furnace and hot water tank.

HRV installation, testing, startup and commissioning shall be in compliance with OBC 2012, Div.B 9.32.3.11, 9.32.3.11(7)&(10)

HRV duct connection shall be in compliance with OBC 2012 Div.B 9.32.3.6(3) & 9.32.3.4(7).

Supply air grill at finished basement shall be at low level. Return air grill for finished or unfinished basement shall be at low level. HRAI digest 2005, clause 7.7(3).

Exterior insulation effective R-Value for wall, roof or exposed floor shall be maintained at the respective location where duct or sanitary pipes are routed inside exterior envelope.

Return air intake shall be provided as recommended in HRAI Digest 2005 Section 4.7 Return air inlet should be positioned so that short circuiting of supply air is avoided. A high and low wall return air combination shall be provided when a combined cooling & heating system is insta

SB-12 PERFORMANCE

3. REVISED ACH

				HVAC LE	GEND			ا ،	1121102211011	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	⊠	RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE	.65	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	X	REDUCER		REVISIONS	
		1								

and fresh air connected to return air plenum, stale air intake and fresh air supply shall be separated

minimum 3' or as recommended by HRV/ERV

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ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY) RICHMOND HILL. ONTARIO

FIN BSMT 2009 END

MICHAEL O'ROURKE HAVE REVIEW IND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED INDER DIVISION C, 3.2.5 OF THE

DESIGNS LTD.

Manufacturer.

375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca

Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services

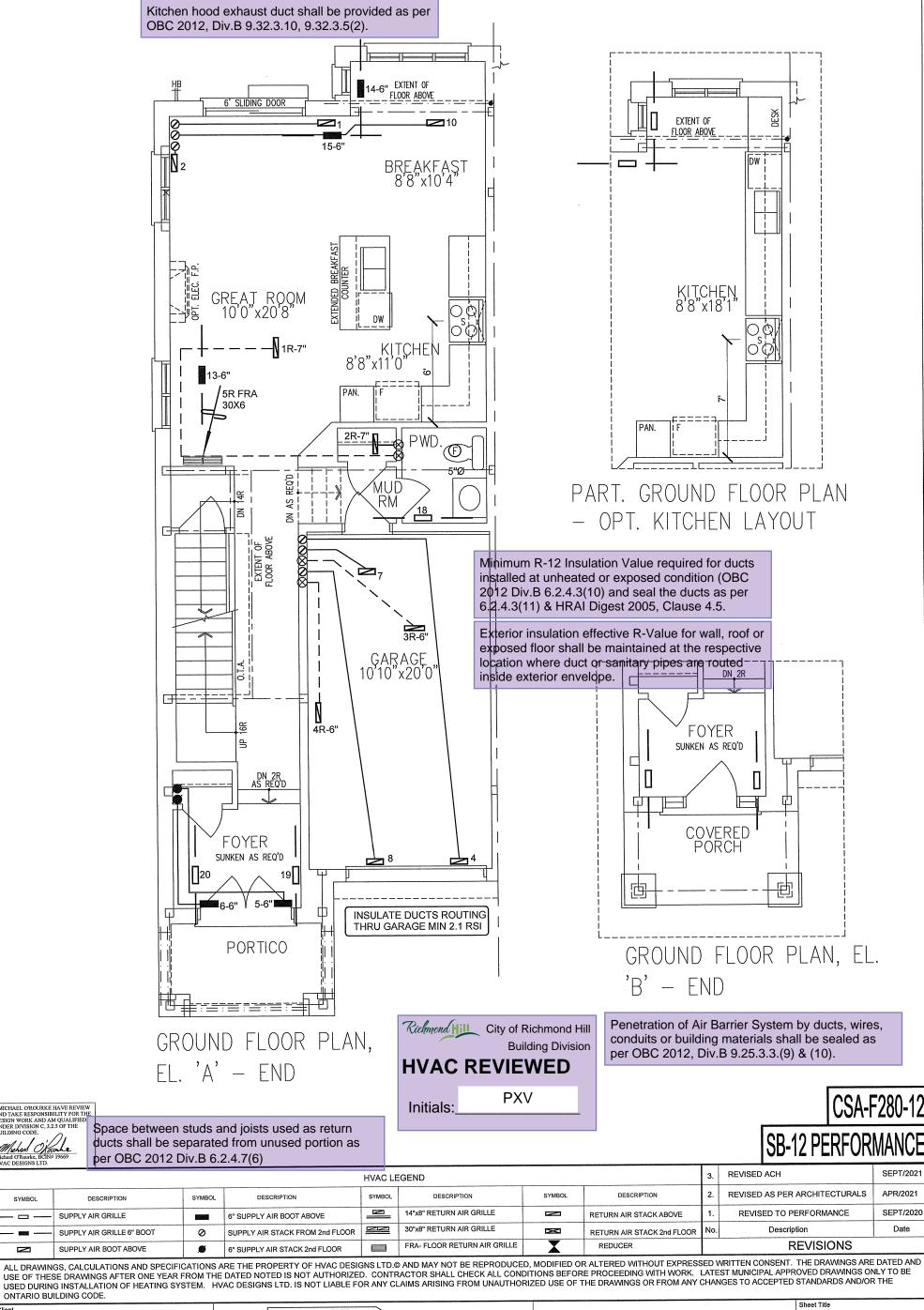
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper Ductwork which passes through the garage or unheated spaces shall be 1700 sqft adequately insulated and be gas-proofed.

	HEAT LOS		BIU/H	# OF RUNS	S/A	R/A	FANS	
	U	NIT DATA		3RD FLOOR				
	MAKE CA	ARRIER		2ND FLOOR	8	4	2	
	MODEL 59TN	6A-060-14\	/	1ST FLOOR	6	1	2	
	INPUT	60	мвти/н	BASEMENT	4	1	1	Date
_	OUTPUT		MBTU/H	ALL S/A DIFFU	SERS	4 "x10)"	Scale
		58		UNLESS NOTE	D OT	HERW	ISE	
e	COOLING	2.0	TONS	ON LAYOUT. A				
_	FAN SPEED	820	cfm @ 0.6" w.c.	UNLESS NOTE ON LAYOUT. U DOORS 1" min.	INDER	CUT	ISE	LC

HEATING LAYOUT SEPT/2020 3/16" = 1'-0" BCIN# 19669

BASEMENT

87537



ONTARIO BUILDING CODE

- -

ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

FIN BSMT 2009 END

MICHAEL O'ROURKE HAVE REVIEW IND TAKE RESPONSIBILITY FOR TH DESIGN WORK AND AM QUALIFIED

1700 sqft

375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca

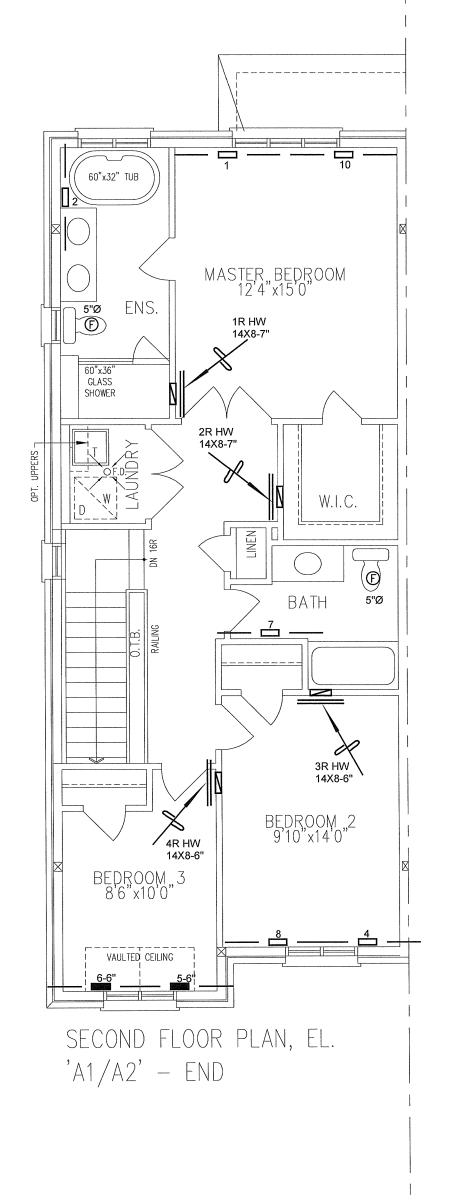
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Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

FIRST FLOOR **HEATING** LAYOUT

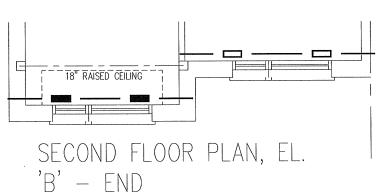
SEPT/2020 3/16" = 1'-0" BCIN# 19669

87537 LO#



Space between studs and joists used as return ducts shall be separated from unused portion as per OBC 2012 Div.B 6.2.4.7(6)

Return air intake shall be provided as recommended in HRAI Digest 2005 Section 4.7 Return air inlet should be positioned so that short circuiting of supply air is avoided. A high and low wall return air combination shall be provided when a combined cooling & heating system is installed.



CSA-F280-12 SB-12 PERFORMANCE

HVAC DESIGNS LTD.										
				HVAC LE	EGEND			3.	REVISED ACH	SEPT/2021
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	×	RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE	Ø	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	X	REDUCER		REVISIONS	

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ROYAL PINE HOMES

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

FIN BSMT 2009 END

1700 sqft

DESIGNS LTD.

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Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

SECOND FLOOR **HEATING** LAYOUT

SEPT/2020 3/16" = 1'-0" Scale

BCIN# 19669

87537 LO#

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		
Building number, street name			Unit no.	Lot/con.
Municipality	Postal code	Plan number/ other desc	ription	
RICHMOND HILL		 		Tax of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the secon
B. Individual who reviews an	d takes responsibility to			THE REGION OF PERSONNELS
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.		
Street address 375 FINLEY AVE			Unit no. 202	Lot/con. N/A
Municipality	Postal code	Province	E-mail	
AJAX	L1S 2E2	ONTARIO	info@hvacdesigns.ca	
Telephone number	Fax number		Cell number	
(905) 619-2300	(905) 619-2375		()	
C. Design activities undertak	en by individual identifie	ed in Section B. [Buildi	ng Code Table 3.5.2.1	OF Division C]
☐ House	⊠ HVAC	- House	☐ Building	Structural
☐ Small Buildings		g Services	Plumbing	
☐ Large Buildings☐ Complex Buildings	☐ Detecti	ion, Lighting and Pow otection		g – All Buildings Sewage Systems
Description of designer's work			2009 END	
HEAT LOSS / GAIN CALCULATION	NS			
DUCT SIZING			OPT 2ND	
RESIDENTIAL MECHANICAL VEI RESIDENTIAL SYSTEM DESIGN		Project:	CENTREFIELD (WEST GOR	MLEY)
D. Declaration of Designer	per CSA-1 200-12			
		List bal on Miles and Supplement of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of		
I MICHAEL O'RO	(print name)		declare that (choose	one as appropriate):
☐ I review and take respo Division C, of the Buildi classes/categories.	nsibility for the design work ong Code. I am qualified, and	on behalf of a firm registere the firm is registered, in th	ed under subsection 3.2.4. e appr	of ropriate
Individual B Firm BCIN:	CIN:			
	nsibility for the design and ar ection 3.2.5.of Di visio	m qualified in the appropria on C, of the Building Code.		
Individual Bo Basis for exc	CIN: <u>19669</u> emption from registration and	d qualification:	O.B.C SENTENCE	3.2.4.1 (4)
The design work is exer Basis for exemption from	mpt from the registrati n registration and qualification		ements of the Building Cod	de.
I certify that:				
The information could I have submitted the	ntained in this schedu is application with the knowle	ule is true to the best of my edge and consent of the fir		
September 10, 2021			Mehal OK	Jule.
Date		•	Signat	ure of Designer

NOTE

^{1.} For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d).of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.

^{2.} Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

S) LTD.
SIGN
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TOTAL COMBINED HEAT LOSS BTU/H: 32477

MICHAEL O'ROURKE

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M DESIGNS.	

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SITE P BUII	CFM CFM CFM CFM CFM CFM CFM CFM CFM CFM	ss noted	AUN #										SUN # VAME MBH. HEAT MBH.	SLING SLIRE	LGH. VGTH VGTH	ST SIZE (ff/min) (ff/min) LL SIZE TRUNK	 					TRUNK E			-				
	HEATING CFM TOTAL HEAT LOSS AIR FLOW RATE CFM RUN COUNT S/A R/A R/A GIRTURES 8 4'X10" unl	"Ø unle:	ROOM NAME	RM LOSS MBH.	RM GAIN MBH.	FM PER RUN COOLING ADJUSTED PRESSURE	ACTUAL DUCT LGH.	TIVE LEF	ADJUSTED PRESSURE ROUND DUCT SIZE	DCITY (I	OUTLET GRILL SIZE TRUNK		RUN # ROOM NAME RM LOSS MBH. CFM PER RUN HEAT RM GAIN MBH.	RUN COC	ACTUAL DUCT LGH. EQUIVALENT LENGTH I. EFFECTIVE LENGTH	ROUND DUCT SIZE IG VELOCITY (fl/min) IG VELOCITY (fl/min) OUTLET GRILL SIZE TRUNK		KUNK SIK	Ē	포	TRU	ѫ			u u	LGH.	ENGTH IVE LH	ESSURE SIZE ZE	<u>7</u> E
	HEATING CFM 820 COOLIN	A runs 5		- A	5	CFM PER RUN COOLING ADJUSTED PRESSURE	ACTU	TOTAL EFFECTIVE LENGTH	ADJUSTI ROUI	HEATING VELOCITY (fl/min)	OUTL		CFM P	CFM PER RUN COOLING ADJUSTED PRESSURE	ACTUAL DUCT LGH. EQUIVALENT LENGTH TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE	ROUND DUCT SIZE HEATING VELOCITY (ffmin) COOLING VELOCITY (ffmin) OUTLET GRILL SIZE TRUNK		SUPPLY AIR I RUNN SIZE						RETURN AIR#	AIR VOLUME	ACTUAL DUCT LGH.	EQUIVALENT LENGTH TOTAL EFFECTIVE LH	ADJUSTED PRESSURE ROUND DUCT SIZE INLET GRILL SIZE	INLET GRILL SIZE
	All Si	All S/				o `		TOT		H S	}			o `	TOT	RA		202						RETUI	AIR VC	ACTU	TOTAL	ADJUS ROUNI INLET	INLET



TYPE:

2009 END

SITE NAME:

CENTREFIELD (WEST GORMLEY)

87538

OPT 2ND RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES	9.32.3.1(1)	SUPPLEMENTAL V	VENTILATION CAPACITY		***
a) Direct vent (sealed combustion) only					9.32.3.
		Total Ventilation Ca	•	137.8	cfm
(Oxoopt mepiaces)		Less Principal Venti	I. Capacity	63.6	cfm
c) Natural draft, B-vent or induced draft gas fireplace		Required Supplement	ntal Capacity	74.2	cfm
d) Solid Fuel (including fireplaces)		DRINGIDAL EVILA			
e) No Combustion Appliances			IST FAN CAPACITY		
HEATING SYSTEM		Model:	VANEE 65H	Location:	BSMT
		63.6	cfm		✓ HVI Approved
Forced Air Non Forced Air		PRINCIPAL EXHAU	ST HEAT LOSS CALCULATION		
Electric Space Heat		63.6 CFM	ΔT *F X 78 F X	FACTOR 1.08	% LOSS X 0.25
		SUPPLEMENTAL F	ANS BY INST.	ALLING CON	TRACTOR
HOUSE TYPE	9.32.1(2)	Location ENS	Model BY INSTALLING CONTRACTOR	cfm	HVI Sones
		BATH	BY INSTALLING CONTRACTOR	50 50	✓ 3.5 ✓ 3.5
Type a) or b) appliance only, no solid fuel		PWD	BY INSTALLING CONTRACTOR	50	√ 3.5
II Type I except with solid fuel (including fireplaces)					
		HEAT RECOVERY V	/ENTIL ATOR		0000
III Any Type c) appliance		Model:	VANEE 65H		9.32.3.11
IV Type I, or II with electric space heat		155	cfm high	64	cfm low
Other: Type I, II or IV no forced air		75	% Sensible Efficiency @ 32 deg F (0 deg C)		HVI Approved
		LOCATION OF WOR			
SYSTEM DESIGN OPTIONS	D.N.H.W.P.	LOCATION OF INST	ALLATION		
1 Exhaust only/Forced Air System		Lot:	(Concession	
2 HRV with Ducting/Forced Air System		Township	F	Plan:	
		Address			
Simplification to folded all system		Roll #	E	Building Permit	#
HRV with Ducting/non forced air system		BUILDER:	ROYAL PINE HOMES		
Part 6 Design				City of Ri	chmond Hill
		Name:		Build	ling Division
FOTAL VENTILATION CAPACITY	9.32.3.3(1)	Address:	HVAC RE		WED
Basement + Master Bedroom 2 @ 21.2 cfm 42.4	cfm	City:	HVACKE	. V I L V	VLD-
Other Bedrooms 2 @ 10.6 cfm 21.2	cfm	Telephone #:	Initiala	PXV	
Kitchen & Bathrooms5 @ 10.6 cfm53	cfm	INSTALLING CONTRA	ACTOR		
Other Rooms 2 @ 10.6 cfm21.2	cfm	Name:			
Table 9.32.3.A. TOTAL <u>137.8</u>	cfm	Address:			
		City:			
RINCIPAL VENTILATION CAPACITY REQUIRED 9.	32.3.4.(1)	City.			
1 Bedroom 31.8	cfm	Telephone #:	Fa	ax #:	
2 Bedroom 47.7	cfm	DESIGNER CERTIFICATION I hereby certify that this	ATION ventilation system has been desig	nod	
3 Bedroom 63.6	cfm	in accordance with the Name:	Ontario Building Code. HVAC Designs Ltd.	neu	
4 Bedroom 79.5	cfm	Signature:		01/1	
5 Bedroom 95.4	cfm	HRAI#	Maked (•	
			0	01820	
I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUALIFIE	ED IN THE APPRO	Date: PRIATE CATEGORY AS AN "OT	Sept "HER DESIGNER" UNDER DIVISION C, 3.2.9	ember-21 OF THE BUILDIN	NG CODE.
MICHAEL O'ROUF	KNE				



		CSA F28 Form	30-12 Residential Hea ula Sheet (For Air Lea	SA F280-12 Residential Heat Loss and Heat Gain Calculations Formula Sheet (For Air Leakage / Ventiliation Calculation)	Calculations (culation)				
LO#: 87538	Model: 2009 END		Builde	Builder: ROYAL PINE HOMES				Date: 9	Date: 9/10/2021
	Volume Calculation	on			Ai	Air Change & Delta T Data	T Data		
House Volume					WINTER NATU	WINTER NATURAL AIR CHANGE RATE	RATE	0.275	
Floor	Floor Height (ft) 9	Volume (ft³) 6786			SUMMER NATI	SUMMER NATURAL AIR CHANGE RATE	RATE	0.083	
First 754	10	7615.4				T reito C	ogji C om to oc	000	
Third 0	0 0	7027				Tin °C	Design Temperature Direcence	rence	AT °C
	6	0			Winter DTDh	22	-21	43	78
	Total: Total:	22,033.4 ft³ 623.9 m³			Summer DTDc	24	31	7	13
5.2.	5.2.3.1 Heat Loss due to Air Leakage	Air Leakage			6.2.6 Ser	6.2.6 Sensible Gain due to Air Leakage	o Air Leakage		
$HL_{airb} =$	$HL_{airb} = LR_{airh} \times \frac{V_b}{2.6} \times DTD_h \times 1.2$	$DTD_h \times 1.2$)H	$HG_{salb} = LR_{airc} \times \frac{V_b}{2 \cdot \epsilon} \times DTD_c \times 1.2$	$\frac{V_b}{2.6} \times DTD_c \times$	1.2		
0.275 x 173.31	× 43°C	_ × <u>1.2</u>	= 2469 W	= 0.083	x 173.31	x 7°C ×	(1.2	"	123 W
			= 8425 Btu/h					<u></u> "	420 Btu/h
5.2.3.2 He	5.2.3.2 Heat Loss due to Mechanical Ventilation	inical Ventilation			6.2.7 Sensi	6.2.7 Sensible heat Gain due to Ventilation	e to Ventilation		
$HL_{vairb} =$	$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$	$1.08 \times (1-E)$		$HL_{\mathbf{v}}$	$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$	$h_h \times 1.08 \times (1)$	1-E)		
64 CFM x 78 °F	x 1.08	× 0.25	= 1336 Btu/h	64 CFM	x 13 °F	xx x	(0.25	ll II	220 Btu/h
		5.2.3.3 Calcula	tion of Air Change Heat L	5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)	r Multiplier Section)				
	HL_c	$_{airr} = Level Facto$	or \times $HL_{airbv} \times \{(H, H)\}$	$HL_{airr} = Level\ Factor imes HL_{airbv} imes \{ (HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel}) \}$	$HL_{agclevel} + HL_{bgc}$	slevel)}			
	Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (8tu/h)	Level Conductive Heat Air Leakage Heat Loss Multiplier (LF x Loss: (HL _{clavel})	Air Leakage Heat Loss Multi HLairbv / HLlevel)	Multiplier (LF x evel)			
	1	0.5		952'S	0.758				
	8	0.2	8,425	7,522	0.224				
	4	0		0	0000				
	2	0		0	0.000				
	*HLairbv = . *For a balaı	*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLai	*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0	0 =					



375 Finley Ave. Suite 202 Ajax, ON L1S 2E2 Tel: 905.619.2300 Fax: 905.619.2375

Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	2009 END		OPT 2ND	BUILDER: ROYAL PINE HOM	
SFQT:	1700	LO#	87538	SITE: CENTREFIELD (WE	ST GORMLEY)
DESIGN A	SSUMPTIONS				
HEATING			°F	COOLING	°F
OUTDOO	R DESIGN TEMP.		-6	OUTDOOR DESIGN TEMP.	88
INDOOR [DESIGN TEMP.		72	INDOOR DESIGN TEMP. (MAX 75°F)	75
BUILDING	i DATA				
ATTACHM	IENT:		ATTACHED	# OF STORIES (+BASEMENT):	3
FRONT FA	CES:		EAST	ASSUMED (Y/N):	Υ
AIR CHAN	GES PER HOUR:		3.00	ASSUMED (Y/N):	Υ
AIR TIGHT	NESS CATEGORY:		TIGHT	ASSUMED (Y/N):	Υ
WIND EXP	POSURE:		SHELTERED	ASSUMED (Y/N):	Υ
HOUSE VO	DLUME (ft³):		22033.4	ASSUMED (Y/N):	Υ
INTERNAL	SHADING:	BLINDS	/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR	LIGHTING LOAD (Btu/	h/ft²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Υ
FOUNDAT	ION CONFIGURATION		BCIN_1	DEPTH BELOW GRADE:	6.0 f
LENGTH:	52.0 ft	WIDTH:	20.0 ft	EXPOSED PERIMETER:	112.0 f

2012 OBC - COMPLIANCE PACKAGE		
	Compliance	Package
Component	SB-12 PER	FORMANCE
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
Basement Walls Minimum RSI (R)-Value	20	21.12
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value	-	-
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13
Windows and Sliding Glass Doors Maximum U-Value	1.6	-
Skylights Maximum U-Value	2.6	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE





Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Wea	ather Sta	tion Description		1
Province:	Ontario			
Region:	Richmor	nd Hill		
	Site D	escription		
Soil Conductivity:	Normal	conductivity: dry sand, loam	, clay	
Water Table:	Normal ((7-10 m, 23-33 ft)	Richmond Hill City	Richmond Hill
F	oundatio	n Dimensions		uilding Division
Floor Length (m):	15.8		HVAC REVI	EWED
Floor Width (m):	6.1		Initials: P	XV
Exposed Perimeter (m):	34.1			
Wall Height (m):	2.7			
Depth Below Grade (m):	1.83	Insulation Cor	nfiguration	
Window Area (m²):	0.9		Manual Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the	
Door Area (m²):	1.9			
	Radi	ant Slab		
Heated Fraction of the Slab:	0			
Fluid Temperature (°C):	33			
	Desig	n Months		
Heating Month	1			
	Founda	tion Loads		
Heating Load (Watts):		1050		

TYPE: 2009 END **LO#** 87538

OPT 2ND



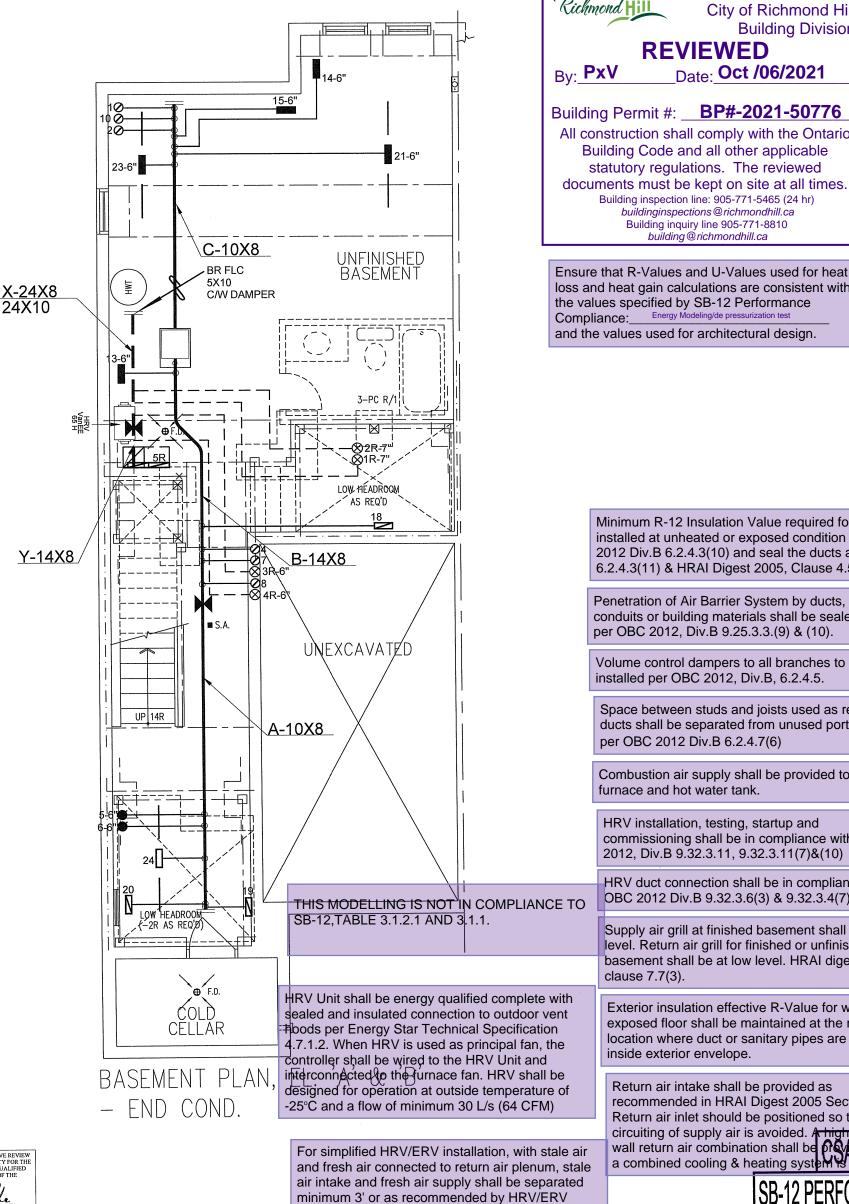
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather St	ation De	scrip	tion			<u> </u>	
Province:	Onta	rio					1
Region:	Rich	mond	Hill				
Weather Station Location:	Opei	n flat t	errain,	grass			
Anemometer height (m):	10				Richmond Hill	City of Ri	chmond H
	Shieldir	ng			Cummena	The second liverage of the second	ing Divisio
Building Site:		rban, 1	forest		HVAC	REVIEV	VED
Walls:	Heav				,	_ \ \	[
Flue:	Heav	•			Initials:	PXV	
Highest Ceiling Height (m):	6.43	•			miliais		
Building	Configur	ation	1				
Type:	Semi					*	1
Number of Stories:	Two						
Foundation:	Fuli						
House Volume (m³):	623.9)					
Air Leaka	ge/Venti	latio	n				İ
Air Tightness Type:				ned (3.	0 ACH)		
Custom BDT Data:		2 10 P			·	98.9 cm²	
	3.00					98.9 Cm @ 50 Pa	
Mechanical Ventilation (L/s):		tal Sup	vla		Total Exha		
· · ·		30.0	1.7		30.0	1431	
Flu	ue Size				30.0		
Flue #:	#1	#2	#3	#4			
Diameter (mm):	0	0	0	0			
Natural Inf							
Heating Air Leakage Rate (ACH/H).27	5			
Cooling Air Leakage Rate (ACH/H	i):	0	.08	3			

TYPE: 2009 END **LO#** 87538

OPT 2ND



Richmond Hill

City of Richmond Hill **Building Division**

REVIEWED

Date: Oct /06/2021

All construction shall comply with the Ontario Building Code and all other applicable statutory regulations. The reviewed

> Building inspection line: 905-771-5465 (24 hr) buildinginspections@richmondhill.ca Building inquiry line 905-771-8810 building@richmondhill.ca

Ensure that R-Values and U-Values used for heat loss and heat gain calculations are consistent with the values specified by SB-12 Performance Compliance: Energy Modeling/de pressurization test

> Minimum R-12 Insulation Value required for ducts installed at unheated or exposed condition (OBC 2012 Div.B 6.2.4.3(10) and seal the ducts as per 6.2.4.3(11) & HRAI Digest 2005, Clause 4.5.

Penetration of Air Barrier System by ducts, wires, conduits or building materials shall be sealed as per OBC 2012, Div.B 9.25.3.3.(9) & (10).

Volume control dampers to all branches to be installed per OBC 2012, Div.B, 6.2.4.5.

Space between studs and joists used as return ducts shall be separated from unused portion as per OBC 2012 Div.B 6.2.4.7(6)

Combustion air supply shall be provided to the furnace and hot water tank.

HRV installation, testing, startup and commissioning shall be in compliance with OBC 2012, Div.B 9.32.3.11, 9.32.3.11(7)&(10)

HRV duct connection shall be in compliance with OBC 2012 Div.B 9.32.3.6(3) & 9.32.3.4(7).

Supply air grill at finished basement shall be at low level. Return air grill for finished or unfinished basement shall be at low level. HRAI digest 2005, clause 7.7(3).

Exterior insulation effective R-Value for wall, roof or exposed floor shall be maintained at the respective location where duct or sanitary pipes are routed inside exterior envelope.

Return air intake shall be provided as recommended in HRAI Digest 2005 Section 4.7 Return air inlet should be positioned so that short circuiting of supply air is avoided. A high and low wall return air combination shall be produced a combined cooling & heating system is installed.

				HVAC LE	GEND			3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED ACH	SEPT/2021
	SUPPLY AIR GRILLE	500	6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	⊠	RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE	S	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	X	REDUCER		REVISIONS	

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ROYAL PINE HOMES

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

OPT 2ND 2009 END

Manufacture

375 Finley Ave. Suite 202 - Aiax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www hyacdesigns.ca

Specializing in Residential Mechanical Design Services

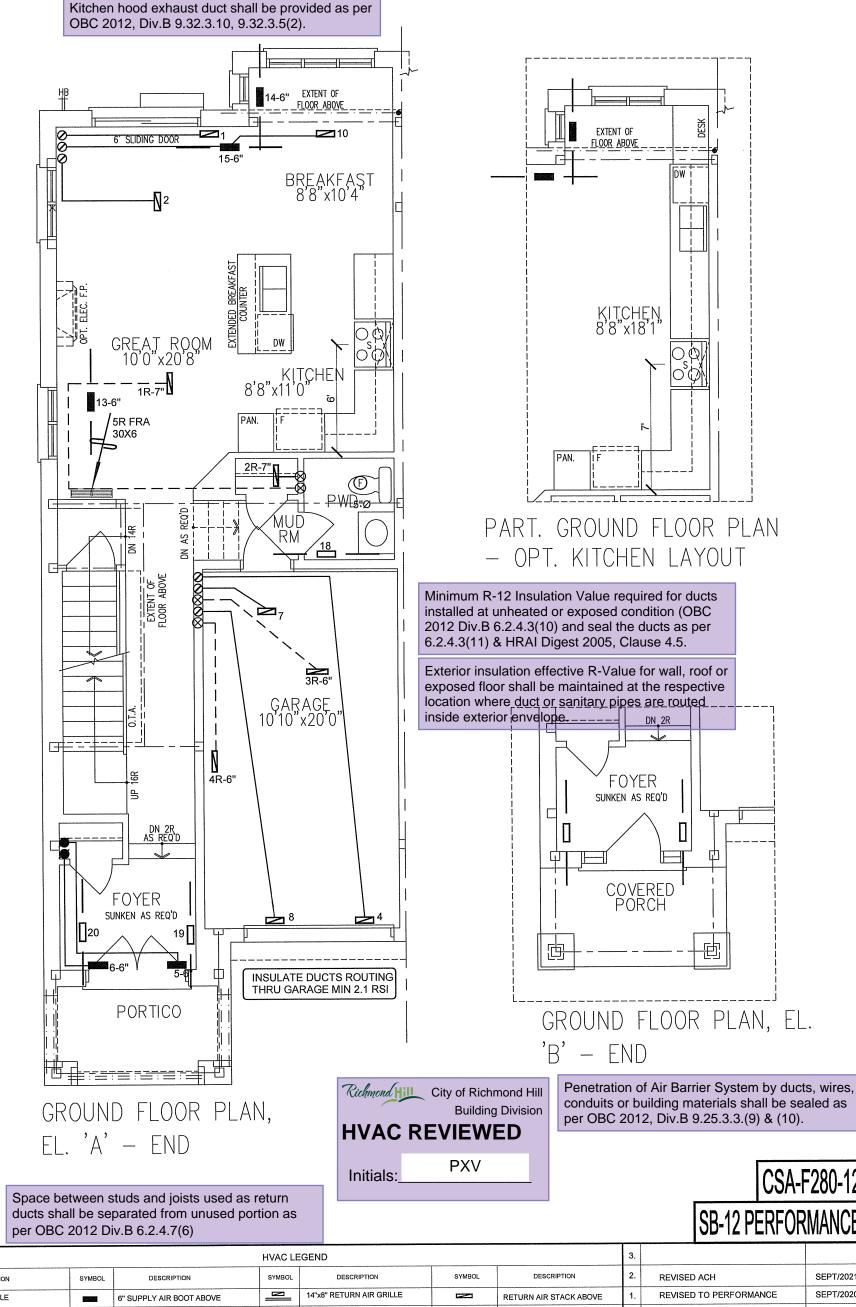
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper Ductwork which passes through the garage or unheated spaces shall be 1700 sqft adequately insulated and be gas-proofed.

	HEAT LUSS 32477	חוטום	# OF RUNS	SIA	KIA	CANO	
	UNIT DATA		3RD FLOOR				
	MAKE CARRIER		2ND FLOOR	8	4	2	
	MODEL 59TN6A-060-14	V	1ST FLOOR	6	1	2	
	INPUT 60	MBTU/H	BASEMENT	3	1	0	Da
	оитрит 58	MBTU/H	ALL S/A DIFFU UNLESS NOTE				Sc
е	COOLING 2.0	TONS	ON LAYOUT. A UNLESS NOTE				-
	FAN SPEED 820	cfm @ 0.6" w.c.	ON LAYOUT. U				L

BASEMENT **HEATING** LAYOUT SEPT/2020

3/16" = 1'-0" BCIN# 19669

87538



MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE

SB-12 PERFORMANCE

				HVAC LE	EGEND			3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED ACH	SEPT/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	×	RETURN AIR STACK 2nd FLOOR	No.	Description	Date
2	SUPPLY AIR BOOT ABOVE	Ø	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	X	REDUCER		REVISIONS	

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ROYAL PINE HOMES

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

OPT 2ND 2009 END

DESIGNS LTD.

375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca

Specializing in Residential Mechanical Design Services

Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper.

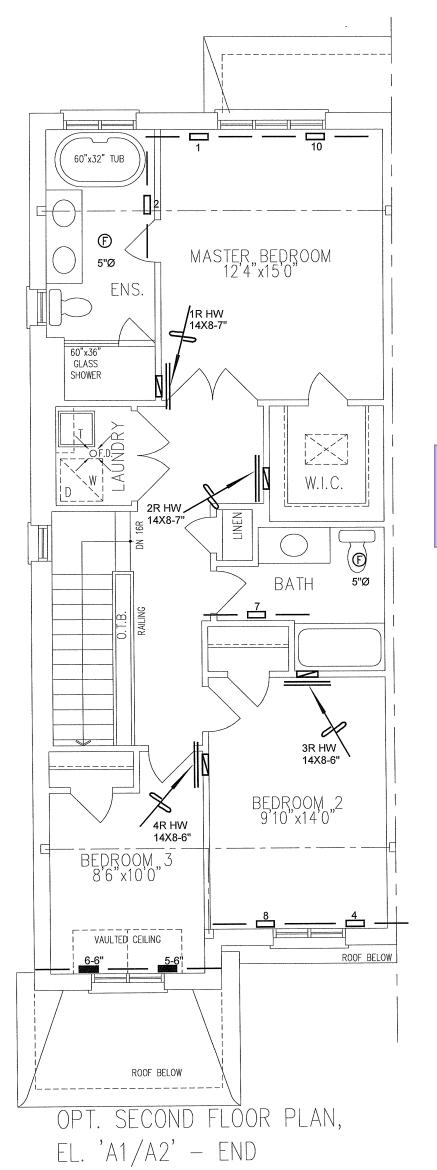
Ductwork which passes through the garage or unheated spaces shall be 1700 sqft adequately insulated and be gas-proofed.

FIRST FLOOR **HEATING**

LAYOUT SEPT/2020

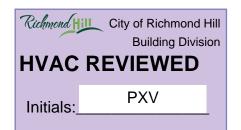
3/16" = 1'-0" BCIN# 19669

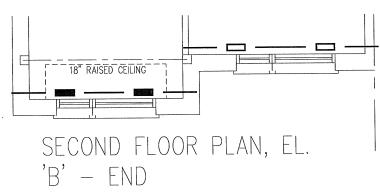
87538



Space between studs and joists used as return ducts shall be separated from unused portion as per OBC 2012 Div.B 6.2.4.7(6)

Return air intake shall be provided as recommended in HRAI Digest 2005 Section 4.7 Return air inlet should be positioned so that short circuiting of supply air is avoided. A high and low wall return air combination shall be provided when a combined cooling & heating system is installed.





CSA-F280-12

SB-12 PERFORMANCE

HVAC DESIGNS LTD.	19669									
				HVAC LE	EGEND			3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED ACH	SEPT/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE	2	RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	×	RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE	Ø	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	X	REDUCER		REVISIONS	

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ROYAL PINE HOMES

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

OPT 2ND

DESIGNS LTD.

375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca

Specializing in Residential Mechanical Design Services

Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be 1700 sqft adequately insulated and be gas-proofed.

SECOND FLOOR **HEATING** LAYOUT

SEPT/2020 3/16" = 1'-0"

BCIN# 19669

LO# 87538

2009 END

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information	Charles Section		The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s		en en samme
Building number, street name				Unit no.	Lot/con.
Municipality	Postal code	Dian number/ other dea			
RICHMOND HILL	Postal code	Plan number/ other des	cription		
B. Individual who reviews and takes r	esponsibility to	Firm		N 12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
MICHAEL O'ROURKE		HVAC DESIGNS LTD.			
Street address			Unit no.		Lot/con.
375 FINLEY AVE			202		N/A
Municipality	Postal code	Province	E-mail		***************************************
AJAX	L1S 2E2	ONTARIO	info@hvacdes	signs.ca	
Telephone number (905) 619-2300	Fax number (905) 619-2375		Cell number		
` '	, ,		()		
C. Design activities undertaken by inc	lividual identifie	ed in Section B. [Build	ing Code Tab	le 3.5.2.1 OF Divis	sion C]
	9 1.0 4.6		_		
☐ House ☐ Small Buildings	⊠ HVAC	– House g Services		Building Structur Plumbing – Hous	
☐ Large Buildings	Detecti	ion, Lighting and Pov	ver 🔲	Plumbing – All B	
☐ Complex Buildings	☐ Fire Pr	otection		On-site Sewage	Systems
Description of designer's work		Model:	2009 END		
HEAT LOSS / GAIN CALCULATIONS DUCT SIZING			FIN BSMT & OF	OT 2ND	
RESIDENTIAL MECHANICAL VENTILATION	N DESIGN SUMM	ARY .			
RESIDENTIAL SYSTEM DESIGN per CSA-F		Project:	CENTREFIELD (WEST GORMLEY)	
D. Declaration of Designer					
IMICHAEL O'ROURKE			declare th	at (choose one as an	ppropriate):
(pri	nt name)		`Richm	at (choose one as ap ond Hill City of	Richmond Hill
I review and take responsibility for	the design work o	n behalf of a firm register	ed under subsec	ction 3.2.4.of Bu	uilding Division
Division C, of the Building Code. I classes/categories.	am qualified, and	the firm is registered, in the	ne HV	AC REVIE	WED
Glasses/categories.			1147	NE VIE	
Individual BCIN: _				. PX	(\/
Firm BCIN: _			—————Initia	als:	
□ I review and take responsibility for	the design and an	n qualified in the appropri	ate cate gory as	an "other	
designer" under subsection 3.2.	5.0f Di Visio	n C, of the Building Code	•		
Individual BCIN:	19669				
Basis for exemption fro	m registration and	l qualification:	O.B.C SEN	TENCE 3.2.4.1	<u>(4)</u>
☐ The design work is exempt	from the registration	on and qualification requir	ements of the B	uilding Code.	
Basis for exemption from registrat	ion and qualificatio	on:			
I certify that:					
 The information contained I have submitted this application 	in this schedu on with the knowle	ule is true to the best of my	y knowledge.		
and a common and approau	on war are knowne	age and consent of the in		. >	
Combando 2024			Muchan	1/2///	
September 10, 2021			7.772		
Date				Signature of Des	ıgner
NOTE:					

^{1.} For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d).of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4, and 3.2.5. of Division C.

^{2.} Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

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SIGNS
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ENS BED-2 BED-3 BATH DAILY AIR CHANGE RATE 0.083 HEAT GAIN AT 9.	10 46 0	o	112 224 80 414 n	LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS GAIN LOSS G		41.5 0 0 0 28 610 1163 36 784 1496 0 0 0	24.9 0 0 7 152 174 0 0 0 13 283 324 0 0 0	1,1,2 to 0,1 10s 3 13s 3/4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.7 84 353 58 218 875 444 K2 3.10 2.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.6 382 502 226 78 103 46 177 233 104 200 263 118 77 104 AE	1.3 0 0 0 0 0 0 0 20 66 26	0.4 0 0 0 0 0 0 0 0 177 462 76 21 66 9 60 131	0	1326 1673 2076 207	1446 738 2224 67 286	0.20 0.22 0.20 0.22 0.20 0.22	297 341 667 6.2	71 36 68 110 3	186 364 28	261 380 7 7	2 433 0 923 923 923	1623 2051 4007 312	3733 6000 100		NB/G PWD FOY	10		133	150 COSS GAIN LOSS 2,7		41.6	101.2	4.3 0 0 0 0 0 1034	0.7 418 1760 289 113 476 78 446 1874		1.3			9 6 6	4790	0.30 0.28	1287		0	0	0 0 0	
ROOM USE	EXP. WALL	FACTORS			17.8 10.0	SOUTH 24 s	27.0	0.17	0.00 8.00 8.00					EXPOSED FLOOR 2.6	SLAB ON GRADE HEAT I OSS	SUBTOTAL HT LOSS	SUB TOTAL HT GAIN	LEVEL FACTOR / MULTIPLIER	AIR CHANGE HEAT LOSS	AIR CHANGE HEAT GAIN	DUCT GAIN	HEAT GAIN PEOPLE 240		TOTAL HT LOSS BTU/H	TOTAL HT GAIN x 1.3 BTU/H	ROOM LISE	EXP. WALL	CLG. HT.	FACTORS	GRS.WALL AREA LOSS GAIN	GLAZING NORTH 24 8	21.8	21.8	21.8	35.8	25.8		; ;	2.8	2.6	SLAB ON GRADE HEAT LOSS	SUBTOTAL HT LOSS	SUB TOTAL HT GAIN	LEVEL FACTOR / MULTIPLIER	AIR CHANGE HEAT LOSS	AIR CHANGE HEAT GAIN	DUCT LOSS		HEAT GAIN APPLIANCES/I IGHTS

MICHAEL O'ROURKE

INDIVIDUAL BCIN: 19669

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ep-21			0.17	0.02	0.15	14	K/B/G	1.97	52	2.58	9 6	2 %	120	193	90.0	9	265	438	4X10	٥																
DATE: Sep-21			r/a pressure	Loss	ure r/a	13	K/B/G	1.97	52	2.58	9 6	5.4	150	154	0.11	9	265	438	‡X10	a																
			r/a pre	r/a grille press. Loss	adjusted pressure r/a		3.												•																	
2009 END	0.6 0.05 0.2	0.35	0.18	0.02	0.16	10	MBR	0.90	, 5 4		3 2		140	179	0.1	2	176	463	3X10	O																
2009 END	furnace filter coil pressure ble pressure	tor s/a & r/a	ıre s/a	s. loss	ıre s/a																															
TYPE: 2009 EN	furnace pressure furnace filte a/c coil pressure available pressure	10r s/	plenum pressure s/a	max s/a dif press. loss	min adjusted pressure s/a	8	BED-2	1.03	27) (2)	17	47	130	177	0.1	2	98	455	3X10	m																
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HOMES	COOLING CFM TOTAL HEAT GAIN AIR FLOW RATE CFM	-		,	ayout.		BE	<i>~</i> `'	ν. ,	<u>.</u> 6	ò	, ro	#	×	ö	S)	22 5	4.	<u>چ</u> ر																	
AL PINE	TOTA AIR FLO	2nd	8	4	wise on I		"	~ 1	_	_			_		_		_	_ (0																	
BUILDER: ROYAL PINE HOMES	77 M	3rd	0	0	ted other erwise or	2	ENS											•	33,10																	
BUILDE	л 820 s 31,141 л 26.33	4th	0	0	nless no	+	E MBR			- 6 - 6									3X10	_	# 1	ш.	-	_	<u>-</u>	(2)	ш	<u>-</u>		T	ш	ш	=	<u>-</u>	11	
	HEATING CFM TOTAL HEAT LOSS AIR FLOW RATE CFM	RUN COUNT	S/A	R/A	All S/A diffusers 4"x10" unless noted otherwise on layout All S/A runs 5"Ø unless noted otherwise on layout	#UN#	ROOM NAME	RM LOSS MBH	CFM PEK KUN HEAT	CFM PER RUN COOLING	ADJUSTED PRESSURE	ACTUAL DUCT LGH	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	ROUND DUCT SIZE	HEALING VELOCITY (IVMIN)	COOLING VELOCII 7 (IVMIN)	OUTLET GRILL SIZE	I KOIN	# VOX	ROOM NAME	KM LOSS MBH.	CFM PEK KUN HEAT	RM GAIN MBH	CFM PER RUN COOLING	ADJUSTED PRESSURE	ACTUAL DUCT LGH	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	ROUND DUCT SIZE	HEATING VELOCITY (ft/min)	COOLING VELOCITY (fl/min)	TION THE PLAN	COLLEI GRILL SIZ

SUPPLY AIR TRUNK SIZE																RETI	RETURN AIR TRUNK SIZE	UNK SIZE					
	TRUNK	STATIC	ROUND	RECT			VELOCITY			TRUNK	STATIC	ROUND	RECT		VEL	٦.	TRUN	IK STATIC		_			VELOCITY
	CFM	PRESS.	DUCT	DUCT			(fVmin)			CFM	PRESS.	DUCT	DUCT		£	min)	CFIV	_	S. DUCT				(ff/min)
TRUNK A	303	0.07	9.3	9	×	æ	545	_	TRUNK G	0	0.0	0	0	×								α	C
TRUNK B	463	0.07	10.9	14	×	ω	595	_	TRUNK H	0	0.00	0	0	×								α	0 0
TRUNK C	357	0.08	9.2	6	×	œ	643		TRUNK I	0	0.00	0	0	×		_						ο α	0 0
TRUNK D	0	0.00	0	0	×	∞	0		TRUNK J	0	0.00	0	0	×								ο α	0 0
TRUNK E	0	0.0	0	0	×	œ	0	-	TRUNK K	0	0.00	0	0	×	8	O TRUI						ο α	
TRUNK F	0	0.00	0	0	×	8	0		TRUNK L	0	0.00	0	0	×			TRUNK T 0	0.05	0	0	×	- ω	0
																TRU						80	0
																TRU						ω	0
RETURN AIR #	τ-	7	ო	4	2											BR TRU						00	· c
	0	0	0	0	0	0	0	0	0	0	0											ο α	615
AIR VOLUME	92	115	75	75	340	0	0	0	0	0	0					-						α	537
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15					_						ο α	50
ACTUAL DUCT LGH.	2	47	26	22	21	-	-	-	-	τ-	-											5	5
EQUIVALENT LENGTH	202	165	242	175	150	0	0	0	0	0	0					_						2	724
TOTAL EFFECTIVE LH	275	212	301	230	171	-	-	_	_	-	-					- 2							
ADJUSTED PRESSURE	0.05	0.07	0.05	90.0	0.09	14.80	14.80	14.80	14.80	14.80	14.80	_		_	_	 : 6							
ROUND DUCT SIZE	6.5	6.5	9	2.7	9.1	0	0	0	0	0	0	0	0			-							
INLET GRILL SIZE	œ	ω	ω	œ	9	0	0	0	0	0	0												
	×	×	×	×	×	×	×	×	×	×	×					×							
INLET GRILL SIZE	14	14	14	14	9	0	0	0	0	0	0			0	0	4							



TYPE:

2009 END

SITE NAME:

CENTREFIELD (WEST GORMLEY)

LO#

87539 FIN BSMT & OPT 2ND

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES	9.32.3.1(1)	SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.
a) Direct vent (sealed combustion) only		Total Ventilation Capacity 148.4 cfm
b) Positive venting induced draft (except fireplaces)		Less Principal Ventil. Capacity63.6 cfm
c) Natural draft, B-vent or induced draft gas fireplace		Required Supplemental Capacity 84.8 cfm
d) Solid Fuel (including fireplaces)		DDWGDAL FYLLUT FAN OARAGEY
e) No Combustion Appliances		PRINCIPAL EXHAUST FAN CAPACITY Model: VANEE 65H Location: BSMT
HEATING SYSTEM		63.6 cfm
Forced Air Non Forced Air		PRINCIPAL EXHAUST HEAT LOSS CALCULATION CFM
Electric Space Heat		63.6 CFM X 78 F X 1.08 X 0.25
Electric Space Heat		SUPPLEMENTAL FANS BY INSTALLING CONTRACTOR
HOUSE TYPE	9.32.1(2)	Location Model cfm HVI Sones ENS BY INSTALLING CONTRACTOR 50 ✓ 3.5
	0.02.1(2)	BATH BY INSTALLING CONTRACTOR 50 ✓ 3.5
✓ I Type a) or b) appliance only, no solid fuel		PWD BY INSTALLING CONTRACTOR 50 ✓ 3.5
II Type I except with solid fuel (including fireplaces)		B-BATH BY INSTALLING CONTRACTOR 50 ✓ 3.5
III Any Type c) appliance		HEAT RECOVERY VENTILATOR 9.32.3.11.
		Model: VANEE 65H 155 cfm high 64 cfm low
IV Type I, or II with electric space heat		75 % Sensible Efficiency HVI Approved
Other: Type I, II or IV no forced air		@ 32 deg F (0 deg C)
		LOCATION OF INSTALLATION
SYSTEM DESIGN OPTIONS	O.N.H.W.P.	
1 Exhaust only/Forced Air System		Lot: Concession
2 HRV with Ducting/Forced Air System		Township Plan:
		Address
✓ 3 HRV Simplified/connected to forced air system		Roll # Building Permit #
4 HRV with Ducting/non forced air system		BUILDER: ROYAL PINE HOMES HILL City of Richmond Hi
Part 6 Design	•	Name: Building Division
TOTAL VENTILATION CAPACITY	9.32.3.3(1)	Address: HVAC REVIEWED
Basement + Master Bedroom 2 @ 21.2 cfm 42.4	cfm	City: PXV
Other Bedrooms 2 @ 10.6 cfm 21.2	cfm	Telephone #: Initials:
Kitchen & Bathrooms	cfm	INSTALLING CONTRACTOR
Other Rooms 2 @ 10.6 cfm 21.2	cfm	Name:
Table 9.32.3.A. TOTAL <u>148.4</u>	cfm	Address:
		City:
PRINCIPAL VENTILATION CAPACITY REQUIRED	9.32.3.4.(1)	Telephone #: Fax #:
1 Bedroom 31.8	cfm	
2 Bedroom 47.7	cfm	DESIGNER CERTIFICATION I hereby certify that this ventilation system has been designed
3 Bedroom 63.6	cfm	in accordance with the Ontario Building Code, Name: HVAC Designs Ltd.
4 Bedroom 79.5	cfm	Signature: Mehad Offende.
5 Bedroom 95.4	cfm	HRAI# 001820
TOTAL 62.6 -f		
TOTAL 63.6 cfm I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUAL	IFIED IN THE APP	Date: September-21 ROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

INDIVIDUAL BCIN: 19669
Maked Office.

MICHAEL O'ROURKE



			CSA F2	80-12 Kesidential Hea ula Sheet (For Air Lea	CSA F280-12 Kesidential Heat Loss and Heat Gain Calculations Formula Sheet (For Air Leakage / Ventiliation Calculation)	Calculations Ilculation)				
LO#: 87539	17539	Model: 2009 END		Builde	Builder: ROYAL PINE HOMES		-		Date: 9	Date: 9/10/2021
		Volume Calculation	uc			A	Air Change & Delta T Data	រ T Data		
House Volume				-		WINTER NAT	WINTER NATURAL AIR CHANGE RATE	ERATE	0.275	
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)			SUMMER NAT	SUMMER NATURAL AIR CHANGE RATE	E RATE	0.083	
BSmt	754	9 01	7615.4							
Second	954	8	7632	1			Design Ter	Design Temperature Difference	rence	
Third	0	0	0				Tin °C	Tout °C	AT °C	AT %
Fourth	0	6	0	4		Winter DTDh	22	-21	43	78
		Total:	22,033.4 ft³	······		Summer DTDc	24	31	7	13
		Total:	623.9 m³							
	5.2.3	5.2.3.1 Heat Loss due to Air Leakage	ir Leakage			6.2.6 Se	6.2.6 Sensible Gain due to Air Leakage	o Air Leakage		
	$HL_{airb} =$	$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$	$7TD_h \times 1.2$		ЭН	$HG_{salb} = LR_{airc} \times \frac{V_b}{3 - 6} \times DTD_c \times 1.2$	$\frac{V_b}{3 \epsilon} \times DTD_c \times$	< 1.2		
0.275	x 173.31	× 43°C	× 1.2	= 2469 W	= 0.083	x 173.31	x 7°C	× 1.2	"	123 W
				= 8425 Btu/h					"	420 Btu/h
	5.2.3.2 He	5.2.3.2 Heat Loss due to Mechanical Ventilation	nical Ventilation			6.2.7 Sens	6.2.7 Sensible heat Gain due to Ventilation	e to Ventilatior		
	$HL_{vairb} =$	$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$	$1.08 \times (1-E)$		HL_{vc}	$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$	$D_h \times 1.08 \times ($	(1 - E)		
64 CFM	x 78 °F	x 1.08	x 0.25	= 1336 Btu/h	64 CFM	x 13 °F	× 1.08	x 0.25	"	220 Btu/h
			5.2.3.3 Calcula	tion of Air Change Heat I	5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)	r Multiplier Section)				
		HL_{α}	_{itrr} = Level Facto	or \times $HL_{airbv} \times \{(H.)\}$	$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$	$HL_{agclevel} + HL_{bg}$	iclevel)}			
		Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (8tu/h)	Level Conductive Heat Air Leakage Heat Loss Multiplier (LF x Loss: (HL _{clevel})	Air Leakage Heat Loss Multi HLairbv / HLlevel)	: Multiplier (LF x Llevel)			
		1	0.5		5,556	0.758				
		2	0.3		9,059	0.279				
		3	0.2	8,425	775/	0.224				
		5	0		0	0.000				
		*HLairbv = A	۱۰ Air leakage heat loss	*HLairbv = Air leakage heat loss + ventilation heat loss						
		*For a balan	*For a balanced or supply only ve	ventilation system HLairve = 0	0=					



375 Finley Ave. Suite 202 Ajax, ON L1S 2E2 Tel: 905.619.2300 Fax: 905.619.2375

Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	2009 END		FIN BSMT & OPT 2ND	BUILDER : R	OYAL PINE HOMES
SFQT:	1700	LO#	87539	SITE: C	ENTREFIELD (WEST GORMLEY)
DESIGN A	SSUMPTIONS				
HEATING			°F	COOLING	°F
OUTDOOR	R DESIGN TEMP.		-6	OUTDOOR DESIGN TEMP	P. 88
INDOOR D	ESIGN TEMP.		72	INDOOR DESIGN TEMP.	(MAX 75°F) 75
BUILDING	DATA				
ATTACHM	ENT:		ATTACHED	# OF STORIES (+BASEME	NT): 3
FRONT FA	CES:		EAST	ASSUMED (Y/N):	Υ
AIR CHANG	GES PER HOUR:		3.00	ASSUMED (Y/N):	Υ
AIR TIGHT	NESS CATEGORY:		TIGHT	ASSUMED (Y/N):	Υ
WIND EXP	OSURE:		SHELTERED	ASSUMED (Y/N):	Υ
HOUSE VO	LUME (ft³):		22033.4	ASSUMED (Y/N):	Υ
INTERNAL	SHADING:	BLINDS	S/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR I	LIGHTING LOAD (Btu/h	ı/ft²):	1.50	DC BRUSHLESS MOTOR (Y/N): Y
FOUNDATI	ON CONFIGURATION		BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH:	52.0 ft	WIDTH:	20.0 ft	EXPOSED PERIMETER:	112.0 ft

2012 OBC - COMPLIANCE PACKAGE		
	Compliand	e Package
Component	SB-12 PEF	RFORMANCE
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
Basement Walls Minimum RSI (R)-Value	20	21.12
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value	-	-
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13
Windows and Sliding Glass Doors Maximum U-Value	1.6	-
Skylights Maximum U-Value	2.6	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE





Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

W	eather Sta	tion Description
Province:	Ontario	
Region:	Richmon	
	Site D	escription
Soil Conductivity:	Normal c	onductivity: dry sand, loam, clay
Water Table:	Normal (7-10 m, 23-33 ft)
	Foundation	n Dimensions
Floor Length (m):	15.8	
Floor Width (m):	6.1	
Exposed Perimeter (m):	34.1	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	Insulation Configuration
Window Area (m²):	0.9	Richmond Hill City of Richmond Hill
Door Area (m²):	1.9	Building Division HVAC REVIEWED
	Radia	int Slab PXV
Heated Fraction of the Slab:	0	Initials:
Fluid Temperature (°C):	33	
	Design	Months
Heating Month	1	
	Foundat	ion Loads
Heating Load (Watts):		1050

TYPE: 2009 END **LO#** 87539

FIN BSMT & OPT 2ND



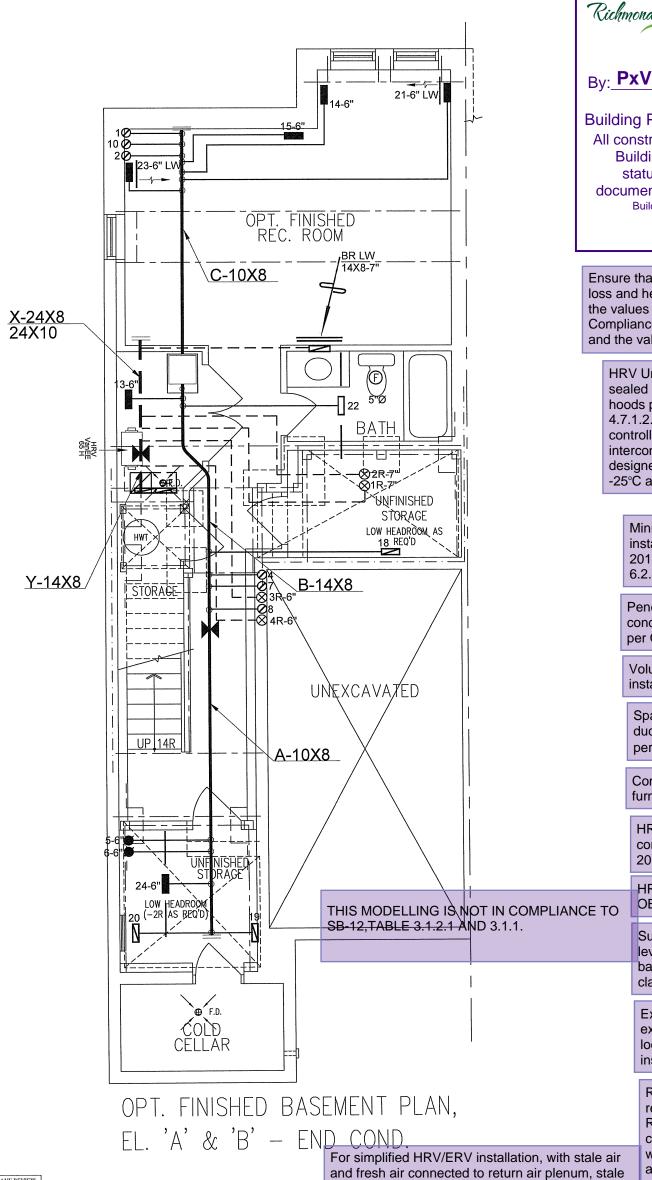
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Station Des	scrip	tion		
Onta	rio			
Richr	nond I	Hill		
Open	flat to	errain	grass	
		_		
	g		Richmond	
		forest		Building Divi
			HVAC	REVIEWED
Heav	y			PXV
6.43			Initials:	FAV
g Configura	ation			
Semi				
Two				
Full				
623.9				
age/Ventil	ation	า		
Energ	y Star	Attacl	hed (3.0 A	ACH)
ELA @	10 Pa	a.		698.9 cm²
3.00				ACH @ 50 Pa
То	tal Sup	ply		Total Exhaust
	30.0			30.0
lue Size				
#1	#2	#3	#4	
0	0	0	0	
nfiltration	Rate	:S		
/H):	0	.27	5	
'H):	0	.08	3	
	Onta Richr Open 10 al Shieldin Subur Heave 6.43 g Configura Semi Two Full 623.9 age/Ventil Energ ELA @ 3.00 To full Onfiltration /H):	Ontario Richmond Richmond Open flat to 10 al Shielding Suburban, fileavy Heavy 6.43 g Configuration Semi Two Full 623.9 age/Ventilation Energy Star ELA @ 10 Pa 3.00 Total Sup 30.0 flue Size #1 #2 0 0 nfiltration Rate /H): Open flat to	Richmond Hill Open flat terrain, 10 al Shielding Suburban, forest Heavy Heavy 6.43 g Configuration Semi Two Full 623.9 age/Ventilation Energy Star Attack ELA @ 10 Pa. 3.00 Total Supply 30.0 Flue Size #1 #2 #3 0 0 0 Infiltration Rates H): O.27	Ontario Richmond Hill Open flat terrain, grass 10 al Shielding Suburban, forest Heavy Heavy 6.43 Initials: Configuration Semi Two Full 623.9 age/Ventilation Energy Star Attached (3.0 A) ELA @ 10 Pa. 3.00 Total Supply 30.0 Flue Size #1 #2 #3 #4 0 0 0 0 0 Infiltration Rates H): O.275

TYPE: 2009 END **LO#** 87539

FIN BSMT & OPT 2ND



Richmond Hill

City of Richmond Hill **Building Division**

REVIEWED

Date: Oct /06/2021

BP#-2021-50776 Building Permit #: __

All construction shall comply with the Ontario Building Code and all other applicable statutory regulations. The reviewed documents must be kept on site at all times.

Building inspection line: 905-771-5465 (24 hr) buildinginspections@richmondhill.ca Building inquiry line 905-771-8810 building@richmondhill.ca

Ensure that R-Values and U-Values used for heat loss and heat gain calculations are consistent with the values specified by SB-12 Performance Compliance: Energy Modeling/de pressurization test Compliance: and the values used for architectural design.

HRV Unit shall be energy qualified complete with sealed and insulated connection to outdoor vent hoods per Energy Star Technical Specification 4.7.1.2. When HRV is used as principal fan, the controller shall be wired to the HRV Unit and interconnected to the furnace fan. HRV shall be designed for operation at outside temperature of -25°C and a flow of minimum 30 L/s (64 CFM)

Minimum R-12 Insulation Value required for ducts installed at unheated or exposed condition (OBC 2012 Div.B 6.2.4.3(10) and seal the ducts as per 6.2.4.3(11) & HRAI Digest 2005, Clause 4.5.

Penetration of Air Barrier System by ducts, wires, conduits or building materials shall be sealed as per OBC 2012, Div.B 9.25.3.3.(9) & (10).

Volume control dampers to all branches to be installed per OBC 2012, Div.B, 6.2.4.5.

Space between studs and joists used as return ducts shall be separated from unused portion as per OBC 2012 Div.B 6.2.4.7(6)

Combustion air supply shall be provided to the furnace and hot water tank.

HRV installation, testing, startup and commissioning shall be in compliance with OBC 2012, Div.B 9.32.3.11, 9.32.3.11(7)&(10)

HRV duct connection shall be in compliance with OBC 2012 Div.B 9.32.3.6(3) & 9.32.3.4(7).

Supply air grill at finished basement shall be at low level. Return air grill for finished or unfinished basement shall be at low level. HRAI digest 2005, clause 7.7(3).

Exterior insulation effective R-Value for wall, roof or exposed floor shall be maintained at the respective location where duct or sanitary pipes are routed inside exterior envelope.

Return air intake shall be provided as recommended in HRAI Digest 2005 Section 4.7 Return air inlet should be positioned so that short circuiting of supply air is avoided. A high and low wall return air combination shall be provided when a combined cooling & heating system is just all a

ISB-12 PERFORMANCE

				HVAC LE	EGEND			3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED ACH	SEPT/2020
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR	<u>22</u>	30"x8" RETURN AIR GRILLE	×	RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE	Ø	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	X	REDUCER		REVISIONS	

air intake and fresh air supply shall be separated minimum 3' or as recommended by HRV/ERV

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ROYAL PINE HOMES

Proiect Name

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

FIN BSMT & OPT 2ND 1700 sqft 2009 END

Manufacturer.

375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca

Specializing in Residential Mechanical Design Services

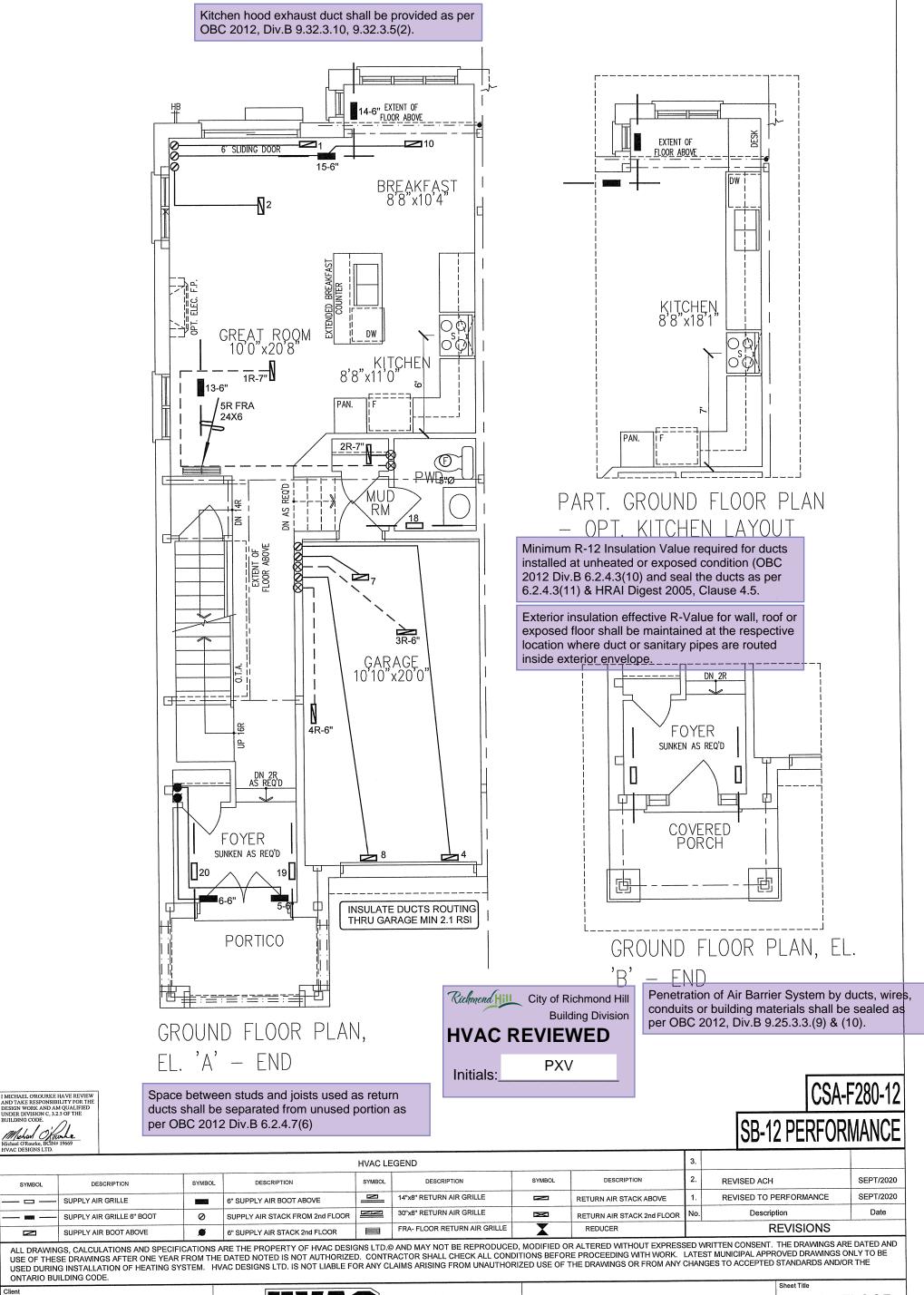
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

		SS 32,477	BTU/H	# OF RUNS	S/A	R/A	FANS	Sheet Title
		JNIT DATA		3RD FLOOR				В
	MAKE	ARRIER		2ND FLOOR	8	4	2	ŀ
-	MODEL 59TN	N6A-060-14\	/	1ST FLOOR	6	1	2	
	INPUT	60	мвти/н	BASEMENT	4	1	1	Date
-	OUTPUT		MBTU/H	ALL S/A DIFFU	SERS	4 "x10)"	Scale
	COOLING	58		UNLESS NOTE ON LAYOUT, A				l
е		2.0	TONS	UNLESS NOTE	D OTI	HERW		1.04
	FAN SPEED	820	cfm @ 0.6" w.c.	ON LAYOUT. U				LU

BASEMENT **HEATING** LAYOUT SEPT/2020

3/16" = 1'-0" BCIN# 19669

_O# 87539



DESIGNS LTD.

ROYAL PINE HOMES

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

FIN BSMT & OPT 2ND 2009 END 1700 sqft

Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be

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375 Finley Ave. Suite 202 - Ajax, Ontario

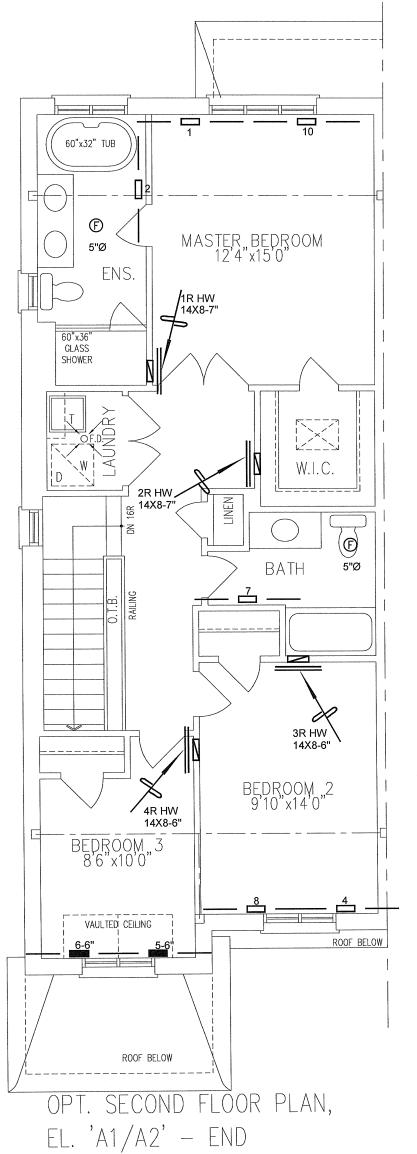
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375

Email: info@hvacdesigns.ca

FIRST FLOOR **HEATING** LAYOUT

SEPT/2020 3/16" = 1'-0" BCIN# 19669

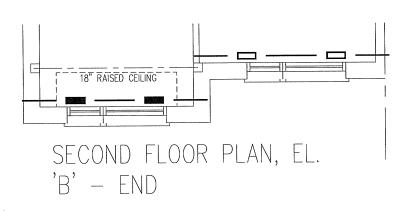
LO# 87539



Space between studs and joists used as return ducts shall be separated from unused portion as per OBC 2012 Div.B 6.2.4.7(6)

Return air intake shall be provided as recommended in HRAI Digest 2005 Section 4.7 Return air inlet should be positioned so that short circuiting of supply air is avoided. A high and low wall return air combination shall be provided when a combined cooling & heating system is installed.

Richmond Hill City of Richmond Hill **Building Division HVAC REVIEWED** PXV Initials:



ISB-12 PERFORMANCE

Michael O'Rourke, BCIN [§] HVAC DESIGNS LTD.										
				HVAC LE	EGEND			3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED ACH	SEPT/2020
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	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR	<u> </u>	30"x8" RETURN AIR GRILLE	×	RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE	.5	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	X	REDUCER		REVISIONS	

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ROYAL PINE HOMES

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

FIN BSMT & OPT 2ND 2009 END



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Specializing in Residential Mechanical Design Services

Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be 1700 sqft adequately insulated and be gas-proofed.

SECOND FLOOR **HEATING LAYOUT**

CSA-F280-12

SEPT/2020 3/16" = 1'-0"

BCIN# 19669

LO# 87539