### MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL

	Housetype	T02 The Thi	stle	File #	691	.2	
Builder	Esquire			Heat Los	s Due to M	lechanical Ve	entilation
Address				PVC X DTDh X	1.2 X (1-E)=		ВТИ
City				Heat Gain [	Due to Mec	hanical Vent	ilation
Phone				PVC X DTDc X	1. 2 X (1-E)=		ВТИ
				The Above is I	N/A if no HRV	is installed	
	Combustion	Appliances		Т	otal Ventil	ation Capacit	ty
✓ a) Direct V	/ent (sealed combu	ust) including firep	laces	Bsmt & Master	2	21.2 cfm	42.4
b) Positive	e venting induced d	lraft (exclude firep	olace)	Other Bed	2	10.6 cfm	21.2
c) Natural	Draft,B vent or ind	luced draft firepla	ces	Bath & Kitchen	4	10.6 cfm	42.4
ြ d) Solid Fu	lel			Other Rooms	2	10.6 cfm	21.2
e) No Com	nbustion Appliance	S			Room	Count cfm	127.2
				Air Change T	VC= House\	/ol.X0.3/60	87.9
	Heating	System					
✓ Forced Air	r						
Non Force	ed Air						
Electric Sp	oace Heat						
	House	etype					
✓ I - Type a	or b appliances onl	y, no solid fuel		Suppl	lemental V	entilation Ca	pacity
II - Type I	with solid fuel (incl	uding fireplace)		TVC room or air	change (which	larger)	127
III - Type (	C appliance			Less Principal Ex	chaust Capacity	(Bath)	70
IV - Type I	or II with electric s	space heat		Required Supp.\	Vent Capacity	CFM	57
Other - Ty	pe I,II,or IV no forc	ed air					
					Supplem	nental Fans	
	System Des	ign Option		Location	cfm	Model	Pipe
✓ Exhaust O	nly/Forced air syste	em		Ens	50	Broan ZB80M	4"
II.—-	lified Connection to	o Forced Air Syste	m	Pwd	50	Broan ZB80M	4"
HRV with	ducting to forced a	ir system					
HRV fully	ducted/ not couple	ed with forced air	sys.				
Part 6 des	sign CSA F326-M91						
✓ Part 9 9.3	2.3.1			all fans HVI liste	d		
	Principal Ver	ntilation Fan			Designer	Certification	
Model				I have reviewed	and take repor	nsibility for this de	sign
Bathroom	Broan ZB80	6"	70cfm	and am qualifie	d as an "other d	designer" as requir	·ed
				by the OBC 3.2.	5 as it relates to	residential HVAC	design
				Alexis Dearie-Vo	onk	A Deaus	·Vonlo

BCIN# 27098

HRAI# 3986

**NEWRES HVAC DESIGN** 

9 Hurontario St

Orangeville Ont

L9W 1Y8

**Heat Loss Calculation** 

I have reviewed and take responsibility for this design & am qualified as an "other designer" as required by the OBC 3.2.5

as it relates to residential HVAC design.

A Degue-Vonlo

Alexis Dearie-Vonk BCIN# 27098 HRAI# 3986

**Customer** Esquire Housetype T02 The

T02 The Thistle

File # 6912 Date May-15

**Township** Ajax

16-320-5870 Heat loss ^T 76 f Heat Gain ^T 11 f Bsmt ^T 22	16-320-5870	Heat loss ^T	76 f	Heat Gain ^T	11 f	Bsmt ^T	22 f
------------------------------------------------------------	-------------	--------------	------	--------------	------	---------	------

	Eff	Е	ns	M	as	В	r2	В	r3	Ва	ath	Liv/	/Din	K	(it	F	oy																				T				Bs	smt
	Fac	Act	Loss	Act	Loss	Act	Loss	Act	Loss	Act	Loss	Act	Loss	Ac	t Los	s Ac	t Loss	Act	Loss	Act Lo	oss /	Act Los	s Ac	t Loss	Ac	t Lo	ss A	Act Loss	s Act	Los	Act	Loss	Act	Loss								
Width		5		14		10		10		19		10		9		8																						Ī			25	
Length		17		17		13		14		8		24		24		16																						T			25	
Area		85		238		130		140		152		240		216		128																									625	
Height		8		8		8		8		8		9		9		9																									8	
LinFtWall		5		14		10		12		1		10		20		24																						T			54	
Gr.Wall		40		112		80		96		8		90		180		216																										
Net Wall	20.8	32	117	94	343	52	190	69	252	8	29	64	234	132	482	192	702																									
Windows																																										
E,W		8	194	18	437	28	680	27	656			26	631	48	1165	24	583																								3	73
S																																										
N																																										
Skylight	3.13																																									
Door	4															21	399																								21	399
Ceiling	49.2	85	131	238	368	130	201	140	216	152	235																															
Cold Flr	27.7					130	357	30	82																																	
Header	20.8											10	37	20	73	24	88																									
HL bgcr																																										3072
SlabHLbgcr																																										
People/App				1		1		1				1		3																												
HL agcr			442		1148		1427		1206		264		902		1721		1771																									
HL airr		2	157	2	407	2	505	2	427	2	93	1	489	1	934	1	961																									2242
HL dr						130	193	30	163																																	
Tot.Rm.Loss	вти	59	99	15	555	21	126	17	797	3!	58	13	91	26	554	2	732																								53	314
HL airb=	-		498	/	3.6	х	42	Х	1.2	Х	0.1	9		1311		w	Х	3.41			447	2	ВТ	U				To	otal S	tructure	Heat	Loss				1852	25	1				

Hlairr Multipliers

2nd BTU	4488	0.2
1st BTU	4394	0.31
Bsmt BTU	3072	0.73

 1311
 W
 X
 3.41
 4472
 BTU

 BasementHLR
 762
 W
 X
 3.41
 2600
 BTU

Total Structure Heat Loss
Mech.Vent Loss
TOTAL HEAT LOSS BTU

18525 NA 18525

All Calculations based on CAN/CSAF280 and HRAI Digest Standards

**NEWRES HVAC DESIGN** 

9 Hurontario street

Orangeville Ont

416-320-5870

L9W 1Y8

HG salb=

**Heat Gain Calculation** 

11 f

Bsmt ^T

76 f

Heat Gain ^T

Heat loss ^T

22 f

I have reviewed and take responsibility for this design  $\&\ \mbox{am}$ 

qualified as an "other designer" as required by the OBC  $\,3.2.5\,$ 

as it relates to residential HVAC design.

A Degue-Vonlo

Alexis Dearie-Vonk BCIN# 27098 HRAI# 3986

Customer

Housetype

Esquire

T02 The Thistle

**File #** 6912

Date May-15

Township Ajax

		E	ns	N	/las		Br2		Br3	E	Bath	Liv	/Din		Kit		Foy																									Bs	mt
	Fac	Act	Gain	Act	Gain	Act	Gair	Act	Gain	Act G	ain	Act G	ain /	Act G	ain	Act	Gain	Act	Gain	Act	Gain	Act	Gain																				
Width		5		14		10	Ï	10	Ï	19		10		9		8		Ï	Ϊ	Ï								ΪΪ	Ĭ	Ï	Ϊ	Ĭ										25	
Length		17		17		13		14		8		24		24		16													ĺ													25	
Area		85		238		130		140		152		240		216		128													ĺ													625	
Height		8		8		8		8		8		9		9		9													ĺ													8	
LinFtWall		5		14		10		12		1		10		20		24													ĺ													54	
Gr.Wall		40		112		80		96		8		90		180		216													ĺ														
Net Wall	20.8	32	22	94	63	52	35	69	46	8	5	64	43	132	89	192	129	9											ĺ														
Windows																																											
E,W	285	8	337	18	673	28	1009	27	975			26	942	48	1681	. 24	874	4																								3	169
S	160																												ĺ														
N	93																												ĺ														
Skylight	534																																										
Door	4															21	74	4																								21	74
Ceiling	49.2	85	73	238	203	130	111	140	120	152	130																																
Cold Flr	27.7					130	42	30	10																																		
Header	20.8											10	7	20	13	24	10	6																								54	36
HG svr																																											
HG dr							368		363																																		
Total Cond			431		939		1197		1151		135	5	991		1783	3	1093	3																									279
Air Leak.			3		6		8		8		1		7	-	12	:	:	7																									2
Peop/App				1	240	1	240	1	240			1	240	3	1604	ı																											
HG sr	•	4	34	1:	186	1	813	1	762		136	1	238	3	399	1	101																									2:	81

BTU

54

X 3.41

Mech. Vent Gain вти НG cb 8000 вти

All Calculations based on CAN/CSAF280 and HRAI Digest Standards

138 X

6 C

Χ

1.2

0.016 X

Total Structure Heat Gain Latent Load Multiplier 11349

**Total Heat Gain BTU** 

14754

#### **NEWRES HVAC DESIGN**

416-320-5870

**Duct Calculation** 

9 Hurontario street
Orangeville Ont
L9W 1Y8

I have reviewed and take responsibility for this design & am qualified as an "other designer" as required by the OBC 3.2.5 as it relates to

residential HVAC design.

Customer Housetype File # Date Esquire T02 The Thistle

6912 May-15

Alexis Dearie-Vonk	BCIN# 27098	HRAI# 3986	Township	Ajax
--------------------	-------------	------------	----------	------

Trunk	В				Α																	
Outlet #	8	12	4	3	1	6	2	7	10	9	11	5										
Outlet Loc	Foy	Bsmt	Br3	Br2	Ens	Liv/Din	Mas	Kit	Bsmt	Liv/Din	Bsmt	Bath										
BTU/RM	2732	5314	1797	2126	599	1391	1555	2654	5314	1391	5314	358										
# Out/Rm	1	3	1	1	1	2	1	1	3	2	3	1										
CFM/Outlet	85	55	56	66	19	22	48	82	55	22	55	11										
Act&Eff Len	145	140	175	205	165	150	180	170	180	190	195	210										
Adj.Press	0.09	0.09	0.07	0.06	0.08	0.09	0.07	0.08	0.07	0.07	0.07	0.06										
Pipe Size	6	5	5	6	5	5	5	6	5	5	5	5										
Tr.Fl.Rate				262								313										
TrunkWidth				10								10										
Tr.Height				8								8										
Velocity				471								564										

Trunk	Z						
Inlet #	4R	3R	1R	2R			
CFM	90	305	90	90			
Inlet Size	6"	30X6	6"	6"			
Act&Eff Len	185	150	170	150			
Adj.Press.	0.06	0.07	0.06	0.07			
Tr.Fl.Rate				575			
Tr.Width				18			
Tr.Height				8			
Velocity			·	575			

Equipment	
Manufacturer	Bryant
Furnace	925SA040
Output	39000
AirFlow	575
AC Size	1.5

Supply Air Pres	0.15
S.Air Plenum Pres	0.14
Diffuser Loss	0.01
System Static	0.5

Return Air Pres	0.15
R.Air Plenum Pres	0.11
Diffuser Loss	0.04

Required equipment capacity based on CAN/CSA-F280 standards

All Calculations based on CAN/CSAF280 and HRAI Digest Standards

	Heat Loss & Gain Calculat	ion Summa	ary Sheet	CSA-F280-N	/l12
These docume	nts issued for the use of	Esq	uire		Project #
and may not be	e used by any other person without authorization. Document	s for permit and	or construction are sign	ed in red	
	Building	Location			
Model:	T02 The Thistle	Site:		River Run	
Address:		Lot:			
City:	Ajax	Postal Code:			
	Calculation	s Based On			
<b>Dimensional</b>	Info. Based on:		lunt Designs		
Attachment:	Semi-Detached	Front Face:	East	Assumed?	Yes
# of Stories:	2+Bsmt	Air Tight:	Very Tight	Assumed?	Yes
Weath Loc:	Ajax <b>Ventilated?</b> Inc	Wind Exp:	Part-Shelter		_
HRV?	NO	Int.Shade:	Yes	Occupants:	4
Recovery %		Unit:	Imperial	<u>-</u>	-
	Heating Design Conditions		Cooling Design	n Conditions	
Out Temp:	-20 Ind.Temp: 22 Soil Temp: 10	Out Temp: 30	Ind.Temp: 24		ST ran: 10
	Above Grade Walls		Below Grad		
Style A:	2X6 @16"OC R24 Brick or Siding	Style A:	R20 Full	Height Insulation	n
Style B:		Style B:			
Style C:		Style C:			
Style D:		Style D:			
	Floors on Soil		Ceilir		
Style A:	No Bsmt Insul below frost line	Style A:	R50 E	Batt Insulation	
Style B:		Style B:			
	Exposed Floors	Style C:			
Style A:	R31-Garage Ceil		Doo		
Style B:		Style A:	K4	4 Insulated	
	Windows	Style B:			
Style A:	Assumed Dbl Low E Argon operable R3.13	Style C:			
Style B:			Skylig	hts	
Style C:		Style A:			
Style D:		Style B:			
Att.Docs:					
Notes:					
	Calculations Performed By	I have reviewe	d and take responsibility f	or this design & am	
Name:	Alexis Dearie-Vonk	qualified as an	"other designer" as requi	red by the OBC 3.2.5	
Company:	New Res Hvac Design	as it relates to	residential HVAC design.		
Address:	9 Hurontario Street	Alexis Dearie-V	onk BCIN# 27098 HF	RAI# 3986	
City:	Orangeville ON	-A.D	care-Vonto		
Postal Code:	L9W 1Y8				
Phone:	416-320-5870				
Email:	alexis_dearie@hotmail.com				

# **Envelope Air Leakage Calculator**

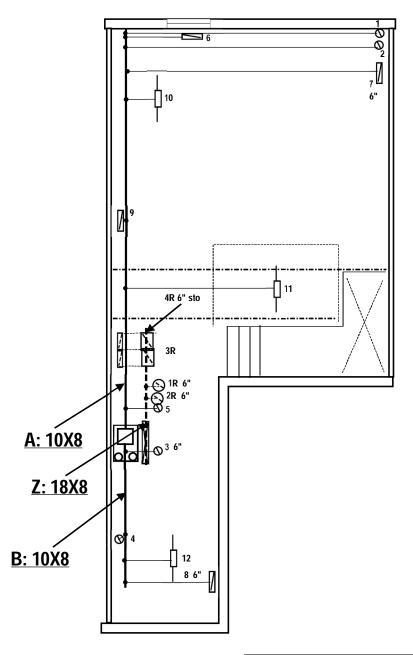
Supplemental tool for CAN/CSA-F280

Weather Station De	escription
Province:	Ontario <a> </a>
Region:	∆iak ▼
Weather Station Location:	Open flat terrain, grass
Anemometer height (m):	10
Local Shieldi	ng
Building Site:	Schurhen forest
Walls:	Vervheuv
Flue:	Haw
Highest Ceiling Height (m):	6.3
Building Configu	ration
Type:	Semi-Detached ▼
Number of Stories:	Two
Foundation:	Full
House Volume (m³):	497
Air Leakage/Vent	tilation
Air Tightness Type:	Present (1961-) (ACH=3.57)
Custom BDT Data:	ELA @ 10 Pa. <b>10 Fa 623.75 cm<sup>2</sup></b>
Custom BDT Data.	3.57 ACH @ 50 Pa
Mechanical Ventilation (L/s):	otal Supply: Total Exhaust:
	80 60
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0
Envelope Air Leaka	age Rate
Heating Air Leakage Rate (ACH/H):	0.188
Cooling Air Leakage Rate (ACH/H):	0.016

## **Residential Foundation Thermal Load Calculator**

Supplemental tool for CAN/CSA-F280

Weather Station Description								
Province:	Ontario							
Region:	Ajax ▼							
Site Description								
Soil Conductivity: Normal conductivity: dry sand, loam, day								
Water Table:	Normal (	7-10 m, 23-33 Ft) ▼						
Fou	undatio	n Dimensions						
Floor Length (m):	12.8							
Floor Width (m):	6.1							
Exposed Perimeter (m):	17.6							
Wall Height (m):	2.5							
Depth Below Grade (m):	1.9	Insulation Configuration						
Window Area (m²):	0.27							
Door Area (m²):	0							
	Radi	ant Slab						
Heated Fraction of the Slab:	0							
Fluid Temperature (°C):	33							
Design Months								
Heating Month	1							
Foundation Loads								
Heating Load (Watts):	Heating Load (Watts): 762							



#### Notes:

-Furnace to have ECM motor

-Hot Water Tank Minimum 0.67 EF

-Heat and Cool loads calculated using CAN/CSA F280

1435 SF

Package D Nom Act Nom Act R50 R49.2 Bsmt wall R20 R20 Ceil.w Attic Ceil.w/o Attic R31 R27.7 R3.13 Windows U2.8 Exp.Floor R31 R27.7 Skylights Walls R24 R20.8 Furn Eff 94% ECM Motor NA Yes HRV Eff

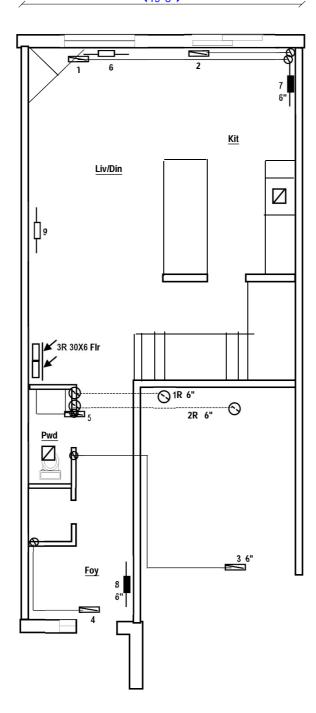
Heat Loss: 18525 BTU Heat Gain: 14754 BTU

**River Run Ajax** 

#### (Or Equivalent Furnace)

All runs 5" unless otherwise specified

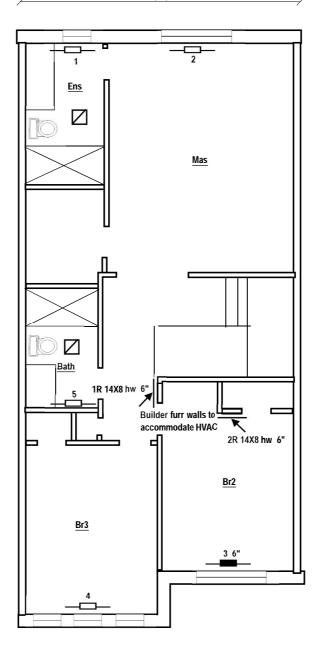
Make	Bryant	UNI	DATA Model	925SA0	40	I have reviewed and take responsibility for this design and am qualified as an "other designer" as described by the OBC Div.C, Part 3, ss 3.2.5	Type Floor	T02 The Thistle	NewRes HVAC Design
Input	40000	вти	Output	39000		in relation to HVAC design.		Basement	9 Hurontario st Orangeville On L9W 1Y8
Cooling	1.5	Tons	Fan	575	Cfm	A Denie-Vorlo	Scale	3/16"=1'0"	Phone (416) 320-5870
	f Runs Floor	S	'A	R/A	l.		Date	Mav-15	Client Esquire
_	loor	4		1		Alexis Dearie-Vonk 27098 3986 BCIN HRAI	Revised	- 7	LO# 6912
Base	ment	3		1					0712



All runs 5" unless otherwise specified  $\,$ 

## River Run-Ajax

Make		DATA Model		I have reviewed and take resp design and am qualified as ar	onsibility for this	Туре	T02 The Thistle	NewRes
Input	RTII	Output	RTII	as described by the OBC Div. in relation to HVAC design.	C, Part 3, ss 3.2.5	Floor	First	HVAC Design  9 Hurontario st Orangeville On L9W 1Y8
Cooling		Fan	Cfm	ĺ		Scale	3/16"=1'0"	Phone (416) 320-5870
No. of Runs 2nd Floor	SI	A	R/A	Alexis Dearie-Vonk 27098	3986	Date	May-15	Client Esquire
1st Floor				BCIN		Revise	d	LO# <b>6912</b>
Basement								



All runs 5" unless otherwise specified

## River Run-Ajax

Make	UNIT DA		I have reviewed and take responsibility for this design and am qualified as an "other designer"	Туре	T02 The Thistle	NewRes
Input	BTU Out	tput BTU	as described by the OBC Div.C, Part 3, ss 3.2.5 in relation to HVAC design.	Floor	Second	HVAC Design 9 Hurontario st Orangeville On L9W 1Y8
Cooling	Tons Far	1 Cfm		Scale	3/16"=1'0"	Phone (416) 320-5870
No. of Runs	S/A	R/A		Date	Mav-15	Client Esquire
2nd Floor			Alexis Dearie-Vonk 27098 3986		iviay- 13	Esquire
1st Floor			BCIN HRAI	Revise	d	<sup>LO#</sup> 6912
Basement						U/12