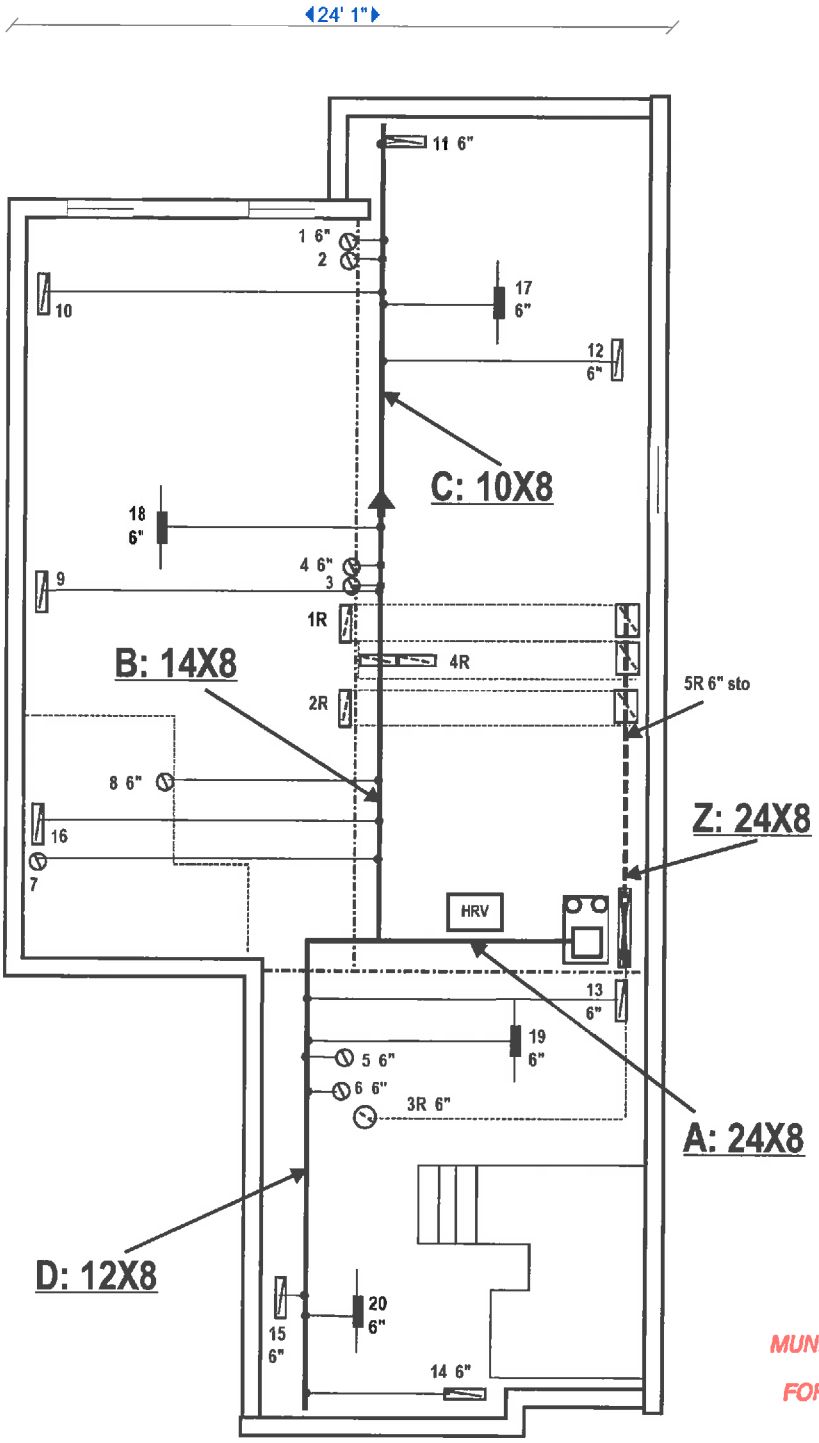


MUNICIPALITY OF CLARINGTON
CERTIFIED COPY
FORMING PART OF BUILDING
PERMIT DRAWINGS

Notes:
- -Furnace to have ECM motor
- -Hot Water Tank Minimum 0.80 EF
- -Heat and Cool loads calculated using CAN/CSA F280
- -HRV: Lifebreath RNC-155, 75%

SB-12 Package A1

	Nom	Act		Nom	Act
Ceil.w Attic	R60	R59.2	Bsmt wall	R20	R21.1
Ceil.w/o Attic	R31	R27.7	Windows		R3.57
Exp.Floor	R31	R27.7	Skylights		U2.8
Walls	R22	R17.0	Furn Eff		96%
ECM Motor	Yes		HRV Eff		75%

Heat Loss: 40026 BTU
Heat Gain: 19661 BTU

(Or Equivalent Furnace)

All runs 5" unless otherwise specified

UNIT DATA

Make	Model		
Goodman	GMEC96060		
Input 60000 BTU		Output 57600 BTU	
Cooling 2 Tons		Fan 830 Cfm	

No. of Runs	S/A	R/A
2nd Floor	8	3
1st Floor	8	1
Basement	4	1

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 in relation to HVAC design.

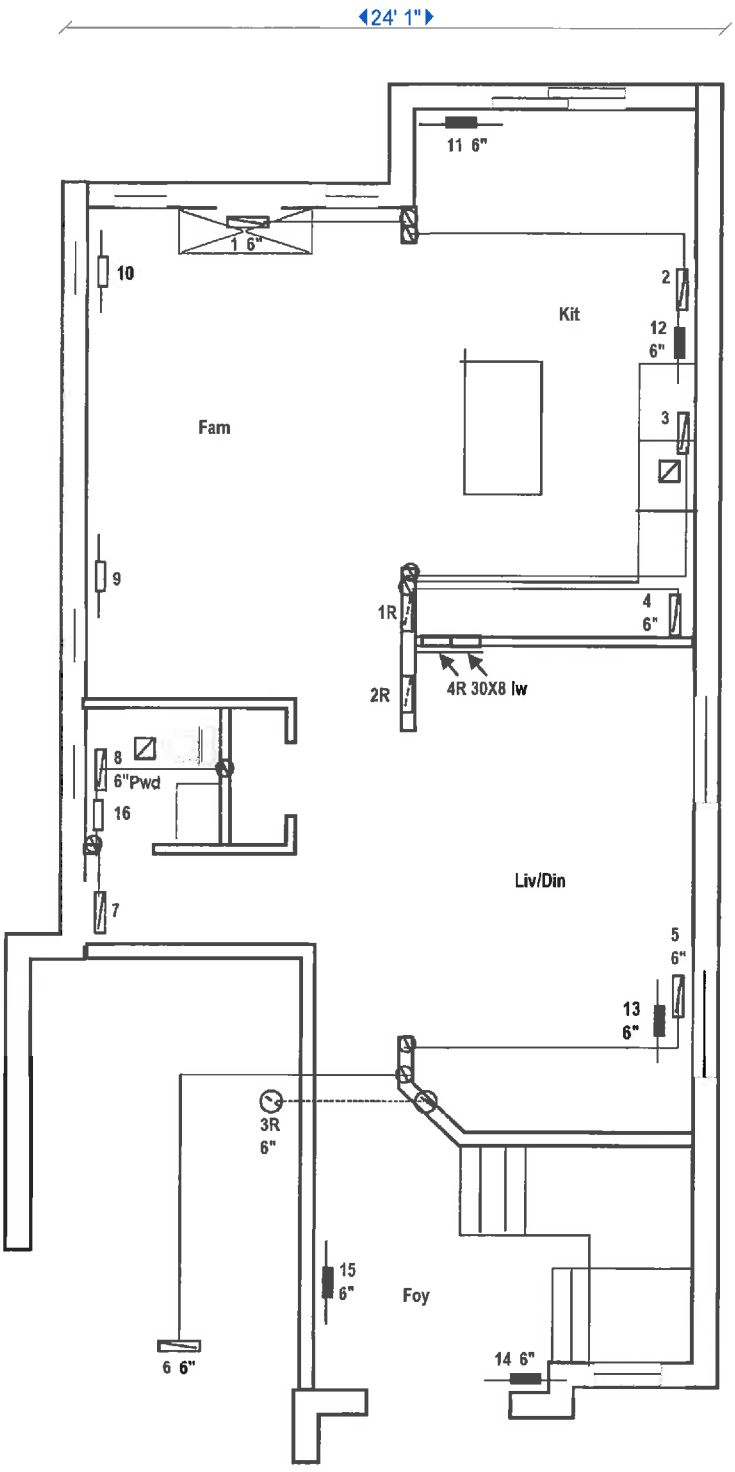
A Dearie-Vonk

Alexis Dearie-Vonk 27098 BCIN 3986 HRAI

Type	33-1
Floor	Basement
Scale	3/16"=1'0"
Date	Mar-20
Revised	

NewRes
HVAC Design
9 Hurontario st Orangeville On L9W 1Y8
Phone (416) 320-5870

Client	Esquire
LO#	10298



All runs 5" unless otherwise specified

UNIT DATA			
Make		Model	
Input	BTU	Output	BTU
Cooling	Tons	Fan	Cfm
No. of Runs	S/A		R/A
2nd Floor			
1st Floor			
Basement			

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 in relation to HVAC design.

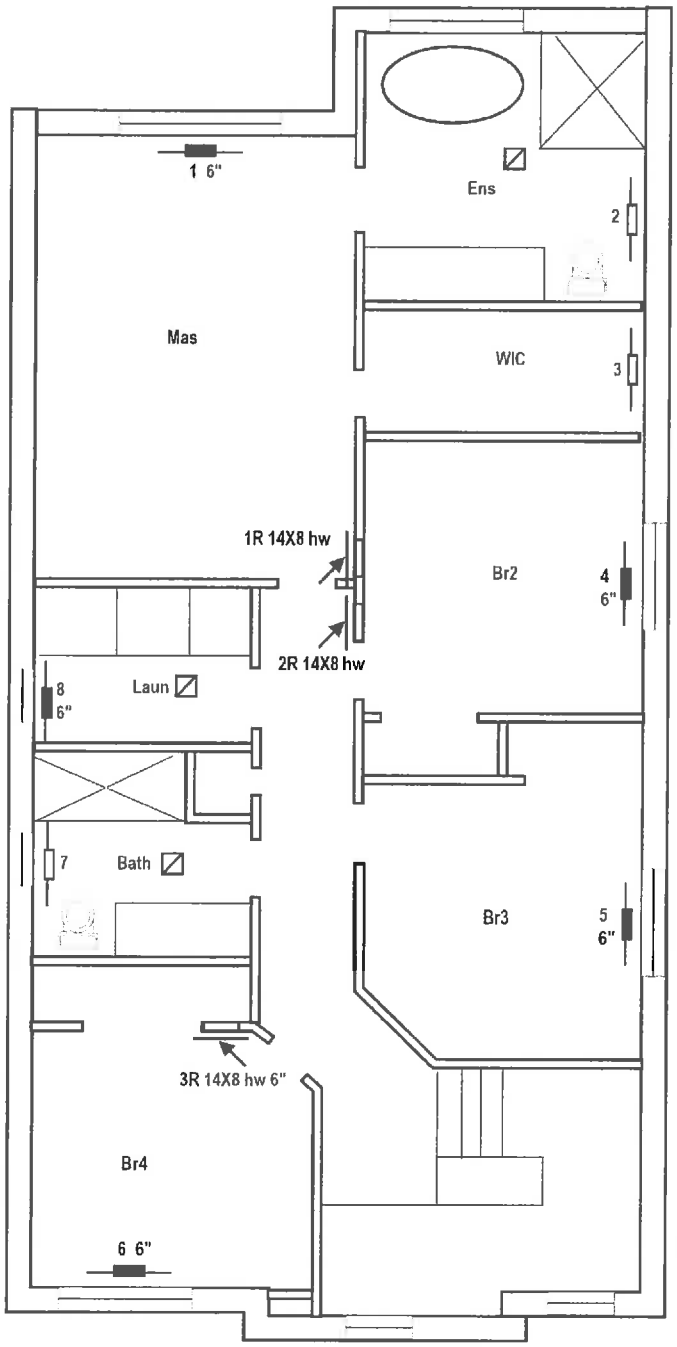
A Dearie-Vonk

Alexis Dearie-Vonk 27098 3986
BCIN HRAI

Type	33-1
Floor	First
Scale	3/16"=1'0"
Date	Mar-20
Revised	

NewRes
HVAC Design
9 Hurontario st Orangeville On L9W 1Y8
Phone (416) 320-5870

Client	Esquire
LO#	10298



All runs 5" unless otherwise specified

UNIT DATA			
Make		Model	
Input	BTU	Output	BTU
Cooling	Tons	Fan	Cfm
No. of Runs	S/A		R/A
2nd Floor			
1st Floor			
Basement			

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 in relation to HVAC design.

A Dearie-Vonk

Alexis Dearie-Vonk 27098 3986
BCIN HRAI

Type	33-1
Floor	Second
Scale	3/16"=1'0"
Date	Mar-20
Revised	

NewRes
HVAC Design
9 Hurontario st Orangeville On L9W 1Y8
Phone (416) 320-5870

Client	Esquire
LO#	10298

MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL

Housetype	Type 33-1

File #	10298

Builder	Esquire
Address	
City	
Phone	

Heat Loss Due to Mechanical Ventilation		
PVC X DTDh X 1.08 X (1-E)=	1970	BTU
Heat Gain Due to Mechanical Ventilation		
PVC X DTDc X 1. 08X(1-ATRE)=	950	BTU

Combustion Appliances

- [x] a) Direct Vent (sealed combust) including fireplaces
- [ ] b) Positive venting induced draft (exclude fireplace)
- [ ] c) Natural Draft,B vent or induced draft fireplaces
- [ ] d) Solid Fuel
- [ ] e) No Combustion Appliances

Total Ventilation Capacity

Bsmt & Master	2	21.2 cfm	42.4
Other Bed	3	10.6 cfm	31.8
Bath & Kitchen	4	10.6 cfm	42.4
Other Rooms	3	10.6 cfm	31.8
		Room Count cfm	148.4

Heating System

- [x] Forced Air
- [ ] Non Forced Air
- [ ] Electric Space Heat

Housetype

- [x] I - Type a or b appliances only, no solid fuel
- [ ] II - Type I with solid fuel (including fireplace)
- [ ] III - Type C appliance
- [ ] IV - Type I or II with electric space heat
- [ ] Other - Type I,II,or IV no forced air

Supplemental Ventilation Capacity

TVC room or air change (which larger)		148
Less Principal Exhaust Capacity (HRV)		80
Required Supp.Vent Capacity	CFM	68

System Design Option

- [x] Exhaust Only/Forced air system
- [x] HRV Simplified Connection to Forced Air System
- [ ] HRV with ducting to forced air system
- [ ] HRV fully ducted/ not coupled with forced air sys.
- [ ] Part 6 design CSA F326-M91
- [x] Part 9 9.32.3.1

Supplemental Fans

Location	cfm	Model	Pipe
Ens	50	Broan ZB80M	5"
Pwd	50	Broan ZB80M	5"
Bath	50	Broan ZB80M	5"

all fans HVI listed

HRV-Principal Ventilation

Model

RNC Lifebreath 155 max

37.5 L/S	80 cfm
ASE	84
SRE 75% @ 0 degrees	ATRE=0 as per hvi.org

Designer Certification

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

Alexis Dearie-Vonk A Dearie-Vonk

BCIN# 27098 HRAI# 3986

NEWRES HVAC DESIGN
9 Hurontario St
Orangeville Ont
L9W 1Y8
416-320-5870

Heat Loss Calculation

Heat loss ^T 76 f Heat Gain ^T 11 f Bsmt ^T 62 f

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.
Alexis Dearie-Vonk BCIN# 27098 HRAI# 3986
A Dearie-Vonk

Customer	Esquire
Housetype	Type 33-1
File #	10298
Date	Mar-20
Township	Clarington

	Eff	Mas		Ens		WIC		Br2		Br3		Br4		Bath		Laun		Fam		Kit		Liv/Din		Foy		Pwd	
	Fac	Act	Loss	Act	Loss	Act	Loss	Act	Loss	Act	Loss	Act	Loss	Act	Loss	Act	Loss	Act	Loss	Act	Loss	Act	Loss	Act	Loss	Act	Loss
Width		12		12		12		12		12		11		11		11		12		13		13		15		12	
Length		17		10		5		12		12		12		7		5		19		20		18		10		10	
Area		204		120		60		144		144		132		77		55		228		260		234		150		120	
Height		8		8		8		8		8		8		8		8		9		9		9		18		9	
LinFtWall		29		24		5		12		12		23		7		5		31		36		18		35		22	
Gr.Wall		232		192		40		96		96		184		56		40		279		324		162		630		198	
Net Wall	17.0	208	928	174	777	40	179	80	357	80	357	159	710	48	214	32	143	239	1067	289	1290	122	544	575	2566	192	857
Windows																											
SE/SW		24	511	18	383			16	341	16	341	25	532	8	170	8	170	40	852	35	745	40	852	55	1171	6	128
N																											
NE/NW																											
Skylight	3.57																										
Door	4																							42	798	42	798
Ceiling	59.2	204	262	120	154	60	77	144	185	144	185	132	169	77	99	55	71							150	193		
Cold Flr	29.8											132	337														
Header	17.0																	31	127	36	148	18	74			22	90
HL bgcr																											
SlabHLbgcr																											
People/App		1						1		1		1						1		3							
HL agcr			1701		1314		256		882		882		1748		483		384		2045		2183		1470		4727		1873
HL airr		2	567	2	438	2	85	2	294	2	294	2	582	2	161	2	128	1	655	1	698	1	490	1	1513	1	599
HL dr												132	233														
Tot.Rm.Loss BTU		2268		1751		341		1176		1176		2563		644		512		2700		2881		1960		6240		2472	

HL airb= 29572 X 0.018 X 76 X 0.3150 = **3735** W = **12743** BTU

BasementHLR **1100** W X 3.41 = **3753** BTU

Total Structure Heat Loss		38056
Mech.Vent Loss		1970
TOTAL HEAT LOSS BTU		40026

Hlairr Multipliers

2nd BTU (0.2)	7650	0.33
1st BTU (0.3)	12299	0.32
Bsmt BTU (0.5)	4999	1.27

All Calculations based on CAN/CSAF280 and HRAI Digest Standards

NEWRES HVAC DESIGN
9 Hurontario street
Orangeville Ont
L9W 1Y8
416-320-5870

Heat Gain Calculation

Heat loss ^T 76 f Heat Gain ^T 11 f Bsmt ^T 62 f

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.
Alexis Dearie-Vonk BCIN# 27098 HRAI# 3986
A Dearie-Vonk

Customer	Esquire
Housetype	Type 33-1
File #	10298
Date	Mar-20
Township	Clarington

	Fac	Mas		Ens		WIC		Br2		Br3		Br4		Bath		Laun		Fam		Kit		Liv/Din		Foy		Pwd											
		Act	Gain	Act	Gain	Act	Gain	Act	Gain	Act	Gain	Act	Gain	Act	Gain	Act	Gain	Act	Gain	Act	Gain	Act	Gain	Act	Gain	Act	Gain	Act	Gain	Act	Gain	Act	Gain	Act	Gain	Act	Gain
Width		12		12		12		12		12		11		11		11		12		13		13		15		12											
Length		17		10		5		12		12		12		7		5		19		20		18		10		10											
Area		204		120		60		144		144		132		77		55		228		260		234		150		120											
Height		8		8		8		8		8		8		8		8		9		9		9		18		9											
LinFtWall		29		24		5		12		12		23		7		5		31		36		18		35		22											
Gr.Wall		232		192		40		96		96		184		56		40		279		324		162		630		198											
Net Wall	17.03	208	61	174	51	40	12	80	23	80	23	159	47	48	14	32	9	239	70	289	85	122	36	575	169	192	56										
Windows																																					
SE/SW	26	24	626	18	470			16	417	16	417	25	652	8	209	8	209	40	1044	35	913	40	1044	55	1435	6	157										
N	11																																				
NE/NW	19																																				
Skylight	47																																				
Door	4																							42	53	42	53										
Ceiling	59.22	204	271	120	160	60	80	144	192	144	192	132	176	77	102	55	73							150	200												
Cold Flr	29.8											132																									
Header	17.03																	31	8	36	10	18	5			22	6										
HG svr			89		63		9		59		59		81		30		27		104		94		101		173		25										
HG dr													445																								
Total Cond			959		680		92		633		633		875		325		291		1122		1008		1084		1856		271										
Air Leak.			39		28		4		26		26		36		13		12		46		41		44		76		11										
Peop/App		1	240					1	240	1	240	1	240					1	650	3	1600																
HG sr		1327		771		104		957		957		1676		369		330		1820		2743		1229		2104		308											

HG salb= 29571.5 X 0.018 X 11 X 0.071 = 122 W 416 BTU

Mech. Vent Gain 950 BTU HG cb 10206 BTU

All Calculations based on CAN/CSAF280 and HRAI Digest Standards

Total Structure Heat Gain	15124
Latent Load Multiplier	1.3
Total Heat Gain BTU	19661

NEWRES HVAC DESIGN
9 Hurontario street
Orangeville Ont
L9W 1Y8
416-320-5870

Duct 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. Dearie-Vonk

Alexis Dearie-Vonk BCIN# 27098 HRAI# 3986

Customer
Housetype
File #
Date
Township

Trunk	D							C						B							A					
Outlet #	14	20	15	6	5	19	13	11	1	2	10	17	12	18	4	3	9	8	16	7	All					
Outlet Loc	Foy	Bsmt	Foy	Br4	Br3	Bsmt	Liv/Din	Kit	Mas	Ens	Fam	Bsmt	Kit	Bsmt	Br2	WIC	Fam	Laun	Pwd	Bath						
BTU/RM	6240	11371	6240	2563	1176	11371	1960	2881	2268	1751	2700	11371	2881	11371	1176	341	2700	512	2472	644						
# Out/Rm	2	4	2	1	1	4	1	2	1	1	2	4	2	4	1	1	2	1	1	1						
CFM/Outlet	68	62	68	56	26	62	43	31	49	38	29	62	31	62	26	7	29	11	54	14						
Act&Eff Len	145	155	155	175	185	180	190	150	160	165	170	180	185	145	160	165	170	180	190	195						
Adj.Press	0.09	0.08	0.08	0.07	0.07	0.07	0.07	0.09	0.08	0.08	0.08	0.07	0.07	0.09	0.08	0.08	0.08	0.07	0.07	0.07						
Pipe Size	6	6	6	5	5	6	5	5	5	5	5	6	5	6	5	5	5	5	5	5						
Tr.Fl.Rate							384						242							446	830					
TrunkWidth							**12**						**10**							**14**	**24**					
Tr.Height							**8**						**8**							**8**	**8**					
Velocity							577						435							573	622					

Trunk	Z									
Inlet #	1R	4R	2R	5R	3R					
CFM	150	350	150	90	90					
Inlet Size	14X8	30X8	14X8	6"	6"					
Act&Eff Len	235	220	200	185	170					
Adj.Press.	0.05	0.05	0.06	0.06	0.06					
Tr.Fl.Rate					830					
Tr.Width					**24**					
Tr.Height					**8**					
Velocity					623					

Equipment	
Manufacturer	Goodman
Furnace	GMEC96060
Output	57600
AirFlow	830
AC Size	2

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

Required equipment capacity based on CAN/CSA-F280 standards

All Calculations based on CAN/CSAF280 and HRAI Digest Standards

Heat Loss & Gain Calculation Summary Sheet

CSA-F280-M12

These documents issued for the use of Esquire and may not be used by any other person without authorization. Documents for permit and/or construction are signed in red

Project #

Building Location

Model:	Type 33-1	Site:	
Address:		Lot:	
City:	Clarington	Postal Code:	

Calculations Based On

Dimensional Info. Based on: RN Design

Attachment:	Detached		Front Face:	East	Assumed? Yes
# of Stories:	2+Bsmt		Air Tight:	Very Tight	Assumed? Yes
Weath Loc:	Bowmanville	Ventilated? Yes	Wind Exp:	Partial Shade	
HRV?	Yes		Int.Shade:	Yes	Occupants: 5
Recovery %	75		Unit:	Imperial	

Heating Design Conditions

Out Temp: -20 Ind.Temp:22 Soil Temp: 10

Cooling Design Conditions

Out Temp:30 Ind.Temp: 24 Lat:43.91 ST ran:11

Above Grade Walls

Style A:	R22 Nominal (R 17.03 Actual)
Style B:	
Style C:	
Style D:	

Below Grade Walls

Style A:	R20ci Nominal (R21.12 Actual)
Style B:	
Style C:	
Style D:	

Floors on Soil

Style A:	
Style B:	

Ceilings

Style A:	R60 Nominal (R59.22 Actual) (R27.65 Actual Ceiling with no attic)
Style B:	
Style C:	

Exposed Floors

Style A:	R31 Nominal (R29.8 Actual)
Style B:	

Doors

Style A:	Assumed Insulated
Style B:	
Style C:	

Windows

Style A:	U 0.28 (R 3.57 Actual)
Style B:	
Style C:	
Style D:	

Skylights

Style A:	U 0.49 (R 2.04 Actual)
Style B:	

Att.Docs:

Notes: 96% Furnace; Min 0.8EF HWT

Calculations Performed By

Name:	Alexis Dearie-Vonk
Company:	New Res Hvac Design
Address:	9 Hurontario Street
City:	Orangeville ON
Postal Code:	L9W 1Y8
Phone:	416-320-5870
Email:	alexis_dearie@hotmail.com

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.

Alexis Dearie-Vonk BCIN# 27098 HRAI# 3986

A. Dearie-Vonk

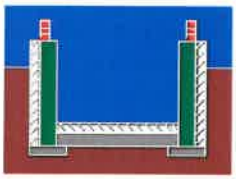
Envelope Air Leakage Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Newcastle (Bowmanville)			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban forest			
Walls:	Very heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	7.1			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m^3):	741			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (ACH=3.57)			
Custom BDT Data:	ELA @ 10 Pa	786.84	cm^2	
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply:	Total Exhaust:		
	37.5	37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Envelope Air Leakage Rate				
Heating Air Leakage Rate (ACH/H):	**0.315**			
Cooling Air Leakage Rate (ACH/H):	**0.071**			

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Newcastle (Bowmanville)	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 Ft)	
Foundation Dimensions		
Floor Length (m):	6.4	 Insulation Configuration
Floor Width (m):	14.6	
Exposed Perimeter (m):	42	
Wall Height (m):	2.5	
Depth Below Grade (m):	1.9	
Window Area (m^2):	2.1	
Door Area (m^2):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	**1100**	