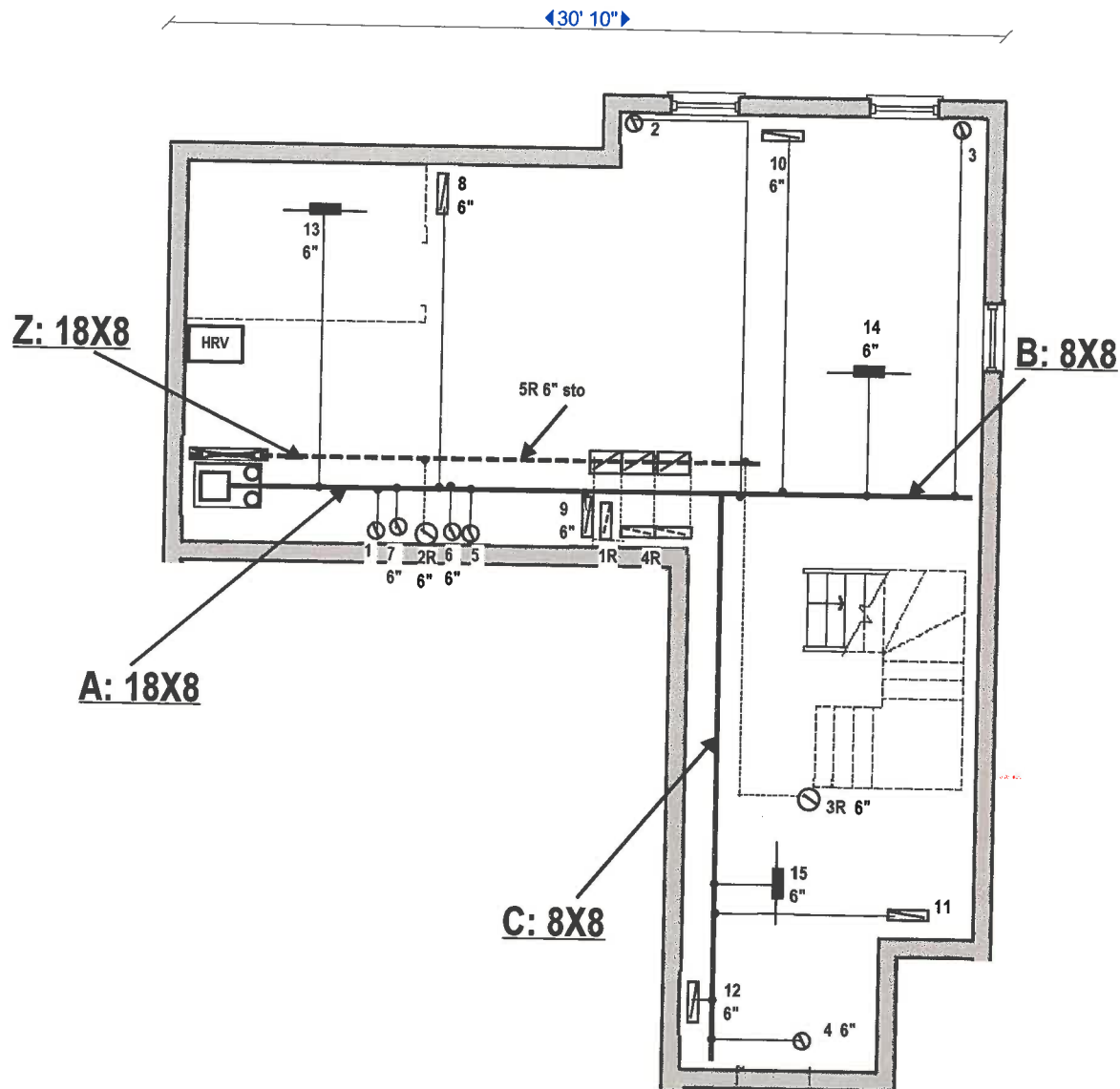




Notes:

- 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

	Norm	Act		Norm	Act
Cell.w Attic	R60	R59.2	Bsmt wall	R20	R21.1
Cell.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: 32545 BTU

Heat Gain: 19319 BTU

(Or Equivalent Furnace)

All runs 5" unless otherwise specified

UNIT DATA			
Make	Goodman		
Model	GMEC96040		
Input	40000	BTU	Output 38400 BTU
Cooling	1.5	Tons	Fan 575 Cfm
No. of Runs	S/A		R/A
2nd Floor	7		3
1st Floor	5		1
Basement	3		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

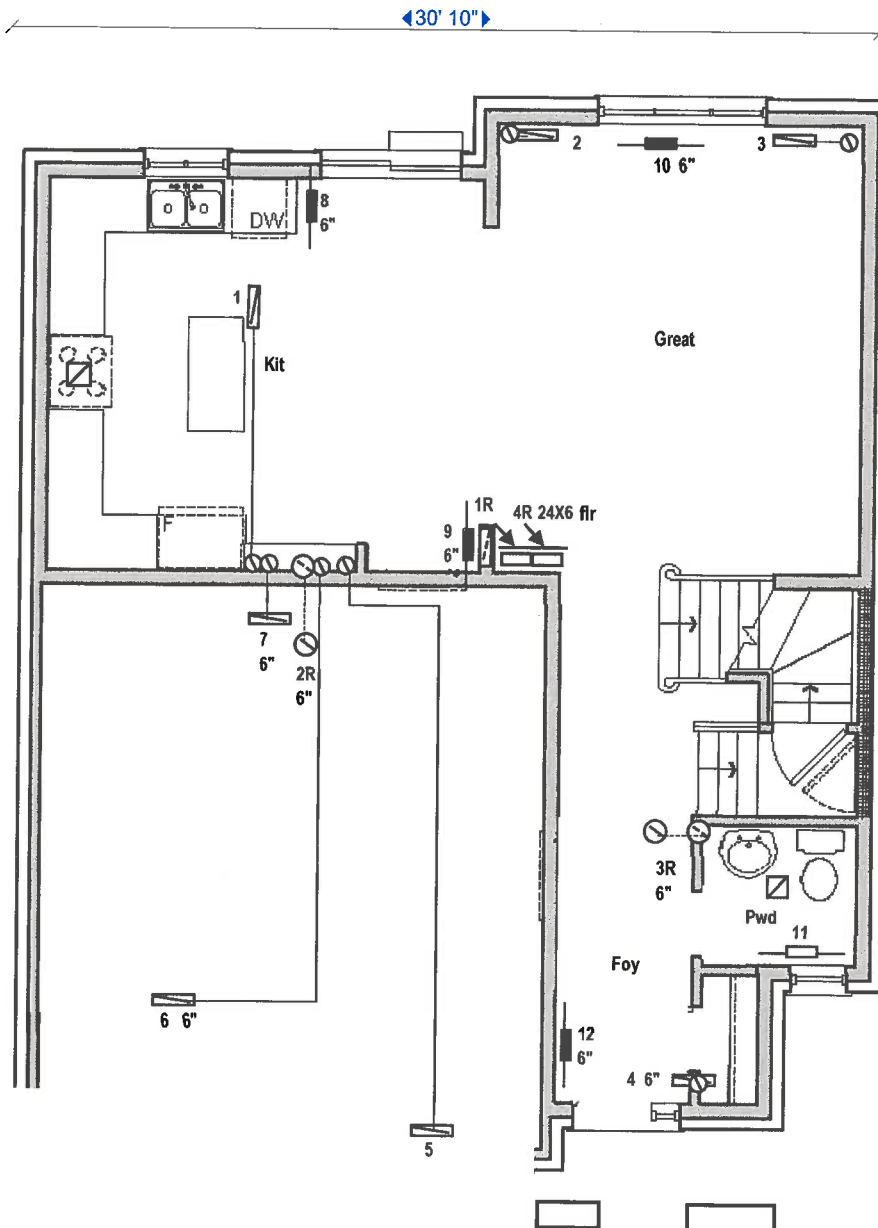
Alexis Dearie-Vonk 27098 3986
BCIN HRAI

Type	37-1
Floor	Basement
Scale	3/16"=1'0"
Date	Oct-19
Revised	

NewRes HVAC Design

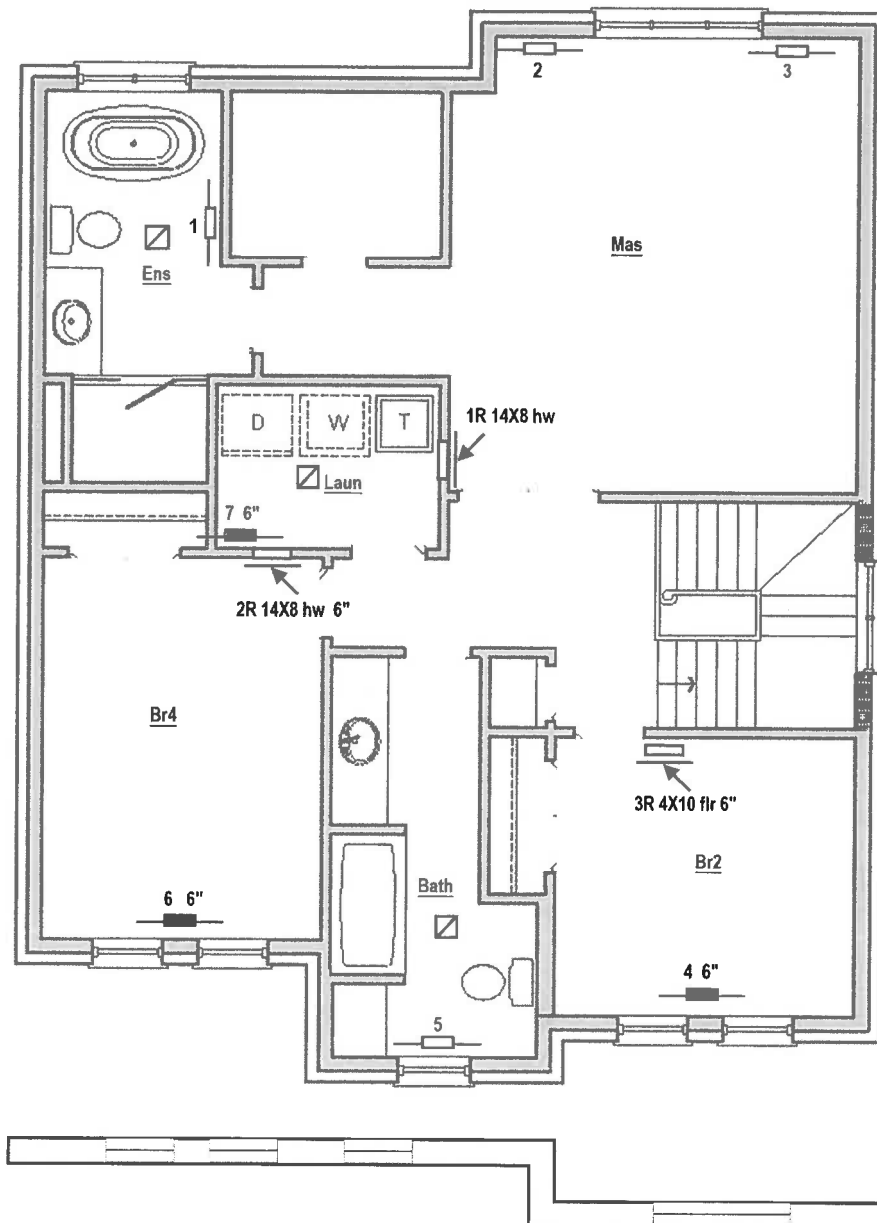
9 Hurontario st Orangeville On L9W 1Y8
Phone (416) 320-5870

Client **Esquire**
LO# **10182**



All runs 5" unless otherwise specified

Make		UNIT DATA Model		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. <i>Alexis Dearie-Vonk</i>	Type	37-1	NewRes HVAC Design 9 Hurontario st Orangeville On L9W 1Y8 Phone (416) 320-5870	
Input		Output			Floor	First		
Cooling		BTU			Scale	3/16"=1'0"		
Tons		Fan			Date	Oct-19		
Cfm					Revised			
No. of Runs	S/A	R/A		Alexis Dearie-Vonk	27098	3986	Client	Esquire
2nd Floor					BCIN	HRAI	LO#	10182
1st Floor								
Basement								



All runs 5" unless otherwise specified

Make		UNIT DATA		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. <i>Alexis Dearie-Vonk</i> Alexis Dearie-Vonk 27098 3986 BCIN HRAI	Type	37-1	NewRes HVAC Design 9 Hurontario st Orangeville On L9W 1Y8 Phone (416) 320-5870
Input	BTU	Output	BTU		Floor	Second	
Cooling	Tons	Fan	Cfm		Scale	3/16"=1'0"	
No. of Runs	S/A	R/A			Date	Oct-19	
2nd Floor					Revised		Client Esquire
1st Floor							LO# 10182
Basement							

MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL

Housetype Type 37-1

File # 10182

Builder	Esquire
Address	
City	
Phone	

Heat Loss Due to Mechanical Ventilation	
PVC X DTDh X 1.08 X (1-E)=	1576 BTU
Heat Gain Due to Mechanical Ventilation	
PVC X DTDc X 1.08X(1-ATRE)=	760 BTU

Combustion Appliances	
☒	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	2	10.6 cfm	21.2
Bath & Kitchen	4	10.6 cfm	42.4
Other Rooms	3	10.6 cfm	31.8
Room Count cfm			137.8

Heating System	
☒	Forced Air
☐	Non Forced Air
☐	Electric Space Heat

Housetype	
☒	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)	138
Less Principal Exhaust Capacity (HRV)	64
Required Supp.Vent Capacity	CFM 74

System Design Option	
☒	Exhaust Only/Forced air system
☒	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
☒	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	
30 L/S	64 cfm
ASE	84
SRE 75% @ 0 degrees	ATRE=0 as per hvi.org

Designer Certification	
I have reviewed and take responsibility 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	<i>Alexis Dearie-Vonk</i>
BCIN# 27098	HRAI# 3986

NEWRES HVAC DESIGN

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

Heat Loss Calculation

Heat loss ΔT 76 f Heat Gain ΔT 11 f Bsmt ΔT 62 f

I have reviewed and take responsibility for this design
qualified as an "other designer" as required by the OB
as it relates to residential HVAC design.

Alexis Dearie-Vonk BCIN# 27098 HRAI# 3986

Alexis Dearie-Vonk

	Eff	Ens		Mas		Br2		Bath		Br3		Laun		Kit		Great		Pwd		Foy										
		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	Act	Loss
Width	17.0		6		15		11		7		10		7		18		14		6		7									
Length			14		17		17		16		14		14		15		17		12		20									
Area			84		255		187		112		140		98		270		238		72		140									
Height			8		8		8		8		8		8		9		9		9		9									
LinFtWall			20		34		28		10		24		7		53		31		15		27									
Gr.Wall			160		272		224		80		192		56		477		279		135		243									
Net Wall			144	643	248	1107	182	812	68	303	170	759	56	250	433	1932	249	1111	121	540	215	959								
Windows																														
SE/SW			16	341	24	511	22	468	12	255	22	468			44	937	30	639	14	298	28	596								
N																														
NE/NW						20	426																							
Skylight	3.57																													
Door	4																			42	798									
Ceiling	59.2	84	108	255	327	187	240	112	144	140	180	98	126																	
Cold Flr	29.8							112	286	140	357	20	51																	
Header	17.0													53	218	31	127	15	62	27	111									
HL bgcr																														
SlabHLbgcr																														
People/App				1		1				1		2		3		1														
HL agcr			1091		1945		1946		988		1764		427		3087		1877		900		2464									
HL airr		2	247	2	440	2	440	2	224	2	399	2	97	1	1026	1	624	1	299	1	819									
HL dr								112	121	140	216	20	52																	
Tot.Rm.Loss BTU		1338		2385		2387		1333		2379		576		4113		2501		1199		3284										

HL airb=

21420 X 0.018 X 76

X 0.3150

2705

W

9230

BTU

BasementHLR

1071

W

X

3.41

3654

BTU

Hlarr Multipliers

2nd BTU (0.2)	8161	0.23
1st BTU (0.3)	8328	0.33
Bsmt BTU (0.5)	4859	0.95

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 &
qualified as an "other designer" as required by the OBC
as it relates to residential HVAC design.

Alexis Dearie-Vonk BCIN# 27098 HRAI# 3986

Alexis Dearie-Vonk

		Ens		Mas		Br2		Bath		Br3		Laun		Kit		Great		Pwd		Foy							
	Fac	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		6		15		11		7		10		7		18		14		6		7							
Length		14		17		17		16		14		14		15		17		12		20							
Area		84		255		187		112		140		98		270		238		72		140							
Height		8		8		8		8		8		8		9		9		9		9							
LinFtWall		20		34		28		10		24		7		53		31		15		27							
Gr.Wall		160		272		224		80		192		56		477		279		135		243							
Net Wall	17.03	144	42	248	73	182	53	68	20	170	50	56	16	433	127	249	73	121	36	215	63						
Windows																											
SE/SW	26	16	417	24	626	22	574	12	313	22	574			44	1148	30	783	14	365	28	730						
N	11																										
NE/NW	19					20	382																				
Skylight	47																										
Door	4																			42	53						
Ceiling	59.22	84	112	255	339	187	249	112	149	140	186	98	130														
Cold Flr	29.8							112		140		20															
Header	17.03													53	14	31	8	15	4	27	7						
HG svr			54		98		119		45		76		14		122		81		38		80						
HG dr								112			2	1234															
Total Cond			571		1038		1258		482		810		147		1289		864		405		853						
Air Leak.			21		39		47		18		30		5		48		32		15		32						
Peop/App				1	240		1	240			1	240	2	1200	3	1600	1	850									
HG sr		647		1415		1664		657		1159		2600		3059		1828		473		966							

HG salb= 21420 X 0.018 X 11 X 0.071 88 W 301 BTU
Mech. Vent Gain 760 BTU HG cb 8066 BTU

All Calculations based on CAN/CSA F280 and HRAI Digest Standards

Total
Late
Tot

NEWRES HVAC DESIGN

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

Duct Calculation

I have reviewed and take r
design & am qualified as a
as required by the OBC 3.2
residential HVAC design.
Alexis Dearie-Vonk

Trunk	C				B				A									
Outlet #	4	12	11	15	3	14	10	2	9	5	6	8	7	1	13			
Outlet Loc	Br2	Foy	Pwd	Bsmt	Mas	Bsmt	Great	Mas	Kit	Bath	Br3	Kit	Laun	Ens	Bsmt			
BTU/RM	2387	3284	1199	9474	2385	9474	2501	2385	4113	1333	2379	4113	576	1338	9474			
# Out/Rm	1	1	1	3	2	3	1	2	2	1	1	2	1	1	3			
CFM/Outlet	44	61	22	59	22	59	46	22	38	25	44	38	11	25	59			
Act&Eff Len	145	155	170	180	150	155	160	170	145	170	180	185	190	195	200			
Adj.Press	0.09	0.08	0.08	0.07	0.09	0.08	0.08	0.08	0.09	0.08	0.07	0.07	0.07	0.07	0.07			
Pipe Size	5	6	5	5	5	5	5	5	5	5	5	5	5	5	5			
Tr.Fl.Rate				186				149							575			
TrunkWidth				8				8							18			
Tr.Height				8				8							8			
Velocity				419				336							575			

Trunk	Z									
Inlet #	3R	4R	1R	5R	2R					
CFM	85	200	120	85	85					
Inlet Size	6"	24X6	14X8	6"	6"					
Act&Eff Len	235	215	190	180	150					
Adj.Press.	0.05	0.05	0.06	0.06	0.07					
Tr.Fl.Rate					575					
Tr.Width					18					
Tr.Height					8					
Velocity					575					

Equipment	
Manufacturer	Goodman
Furnace	GMEC96040
Output	38400
AirFlow	575
AC Size	1.5

Required equipment capacity based on CAN/CSA-F28
All Calculations based on CAN/CSAF280 and HRAI Digi

Heat Loss & Gain Calculation Summary Sheet						CSA-F280-M12	
These documents issued for the use of					Esquire		Project #
and may not be used by any other person without authorization. Documents for permit and/or construction are signed in red							
Building Location							
Model:	Type 37-1				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:	4
Recovery %	75			Unit:	Imperial		
Heating Design Conditions				Cooling Design Conditions			
Out Temp:	-20	Ind.Temp:	22	Soil Temp:	10	Out Temp:	30
						Ind.Temp:	24 Lat:43.91 ST ran:11
Above Grade Walls				Below Grade Walls			
Style A:	R22 Nominal			Style A:	R20ci Nominal		
Style B:	(R 17.03 Actual)			Style B:	(R21.12 Actual)		
Style C:				Style C:			
Style D:				Style D:			
Floors on Soil				Ceilings			
Style A:				Style A:	R60 Nominal		
Style B:				Style B:	(R59.22 Actual)		
Exposed Floors				Style C:	(R27.65 Actual Ceiling with no attic)		
Style A:	R31 Nominal			Doors			
Style B:	(R29.8 Actual)			Style A:	Assumed Insulated		
Windows				Style B:			
Style A:	U 0.28			Style C:			
Style B:	(R 3.57 Actual)			Skylights			
Style C:				Style A:	U 0.49		
Style D:				Style B:	(R 2.04 Actual)		
Att.Docs:							
Notes:	96% Furnace; Min 0.8EF HWT						
Calculations Performed By				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 			
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						

MUNICIPALITY OF CLARINGTON
 CERTIFIED COPY
 FORMING PART OF BUILDING
 PERMIT DRAWINGS

Envelope Air Leakage Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Newcastle (Burrtonville)			
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):	606			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (ACH=3.57)			
Custom BDT Data:	ELA @ 10 Pa: 766.64 cm ² 3.57 ACH @ 50 Pa			
Mechanical Ventilation (L/s):	Total Supply:	Total Exhaust:		
	30	30		
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):	9.4	 Insulation Configuration
Floor Width (m):	10.2	
Exposed Perimeter (m):	39.2	
Wall Height (m):	2.5	
Depth Below Grade (m):	1.9	
Window Area (m ²):	1.9	
Door Area (m ²):	0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1071