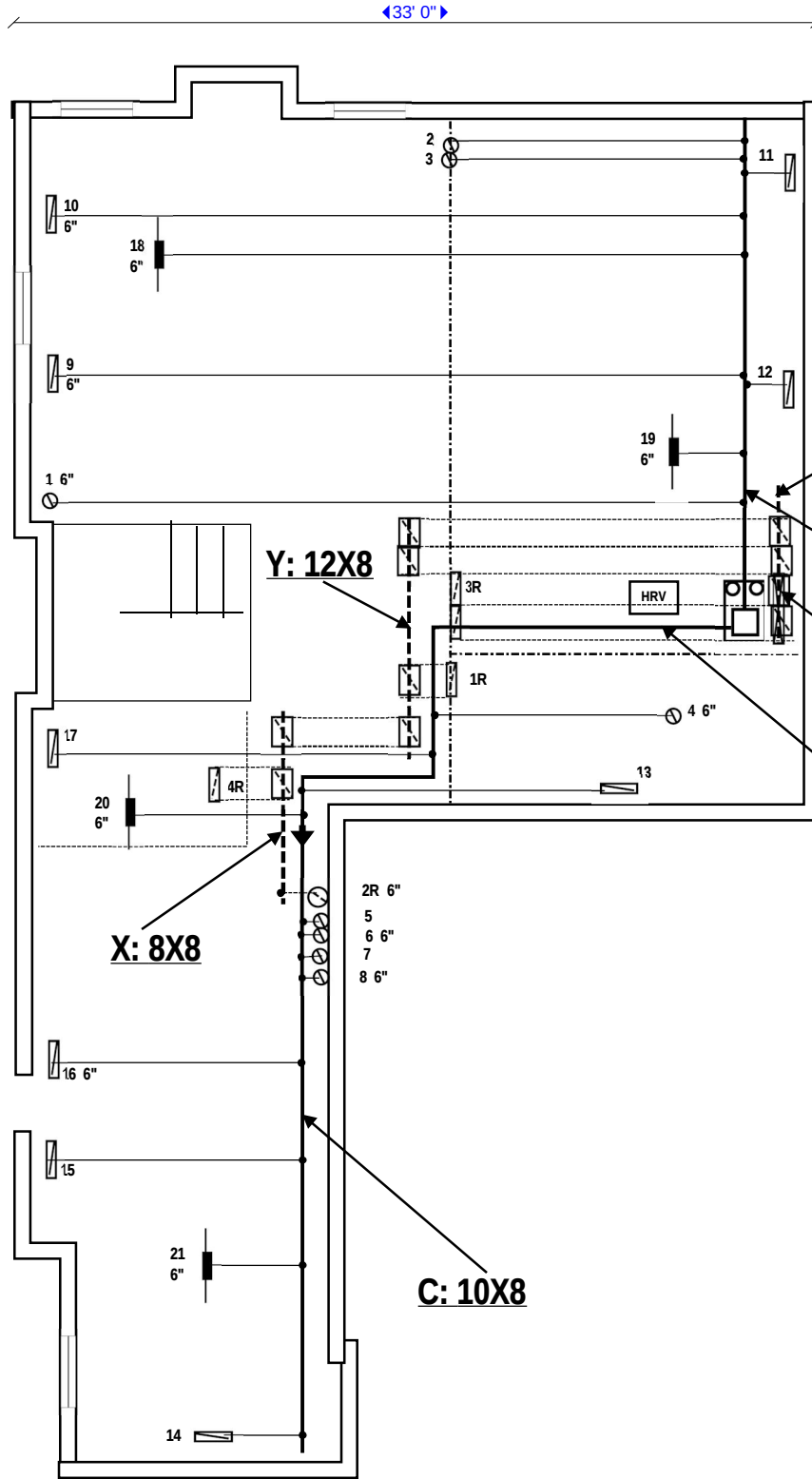




Notes:
 -Furnace to have ECM motor
 -Hot Water Tank Minimum 0.8 EF
 -Heat and Cool loads calculated using CAN/CSA F280
 -HRV: RNC Lifebreath 155 or Equivalent 75% SRE

(Or Equivalent Furnace)

SB-12 Package A1					
	Nom	Act		Nom	Act
Ceil.w Attic	60	59.22	Bsmt wall	20ci	21.12
Ceil.w/o Attic	31	27.65	Windows		R3.57
Exp.Floor	31	29.8	Skylights		
Walls	24	17.03	Furn Eff		96%
ECM Motor	Yes		HRV Eff		75%

Heat Loss: 46113 BTU
 Heat Gain: 21968 BTU

2617 SF

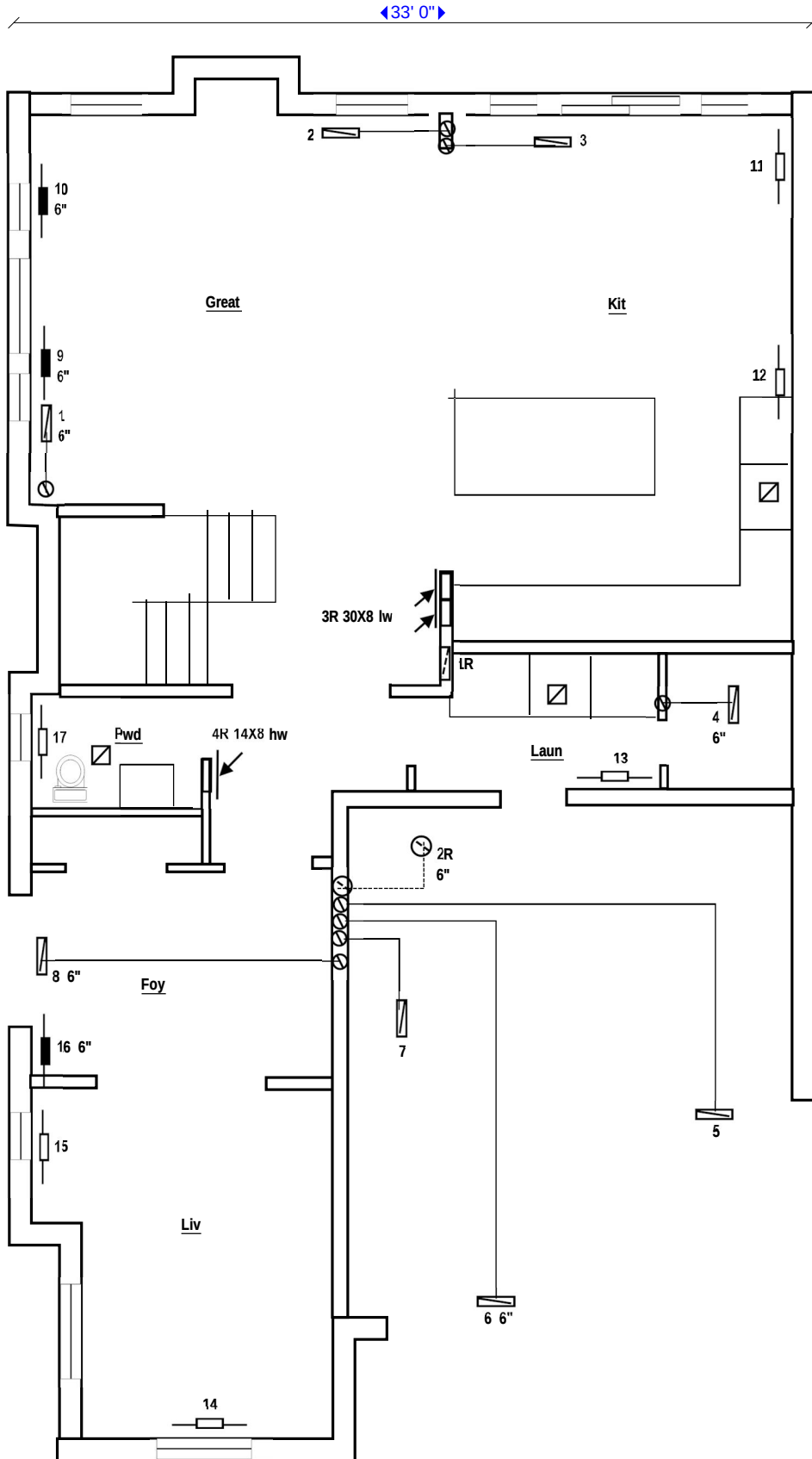
UNIT DATA			
Make	Model		
Goodman	GMEC96060		
Input	60000 BTU	Output	57600 BTU
Cooling	2 Tons	Fan	785 Cfm
No. of Runs	S/A	R/A	
2nd Floor	8	2	
1st Floor	9	2	
Basement	4	1	

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.

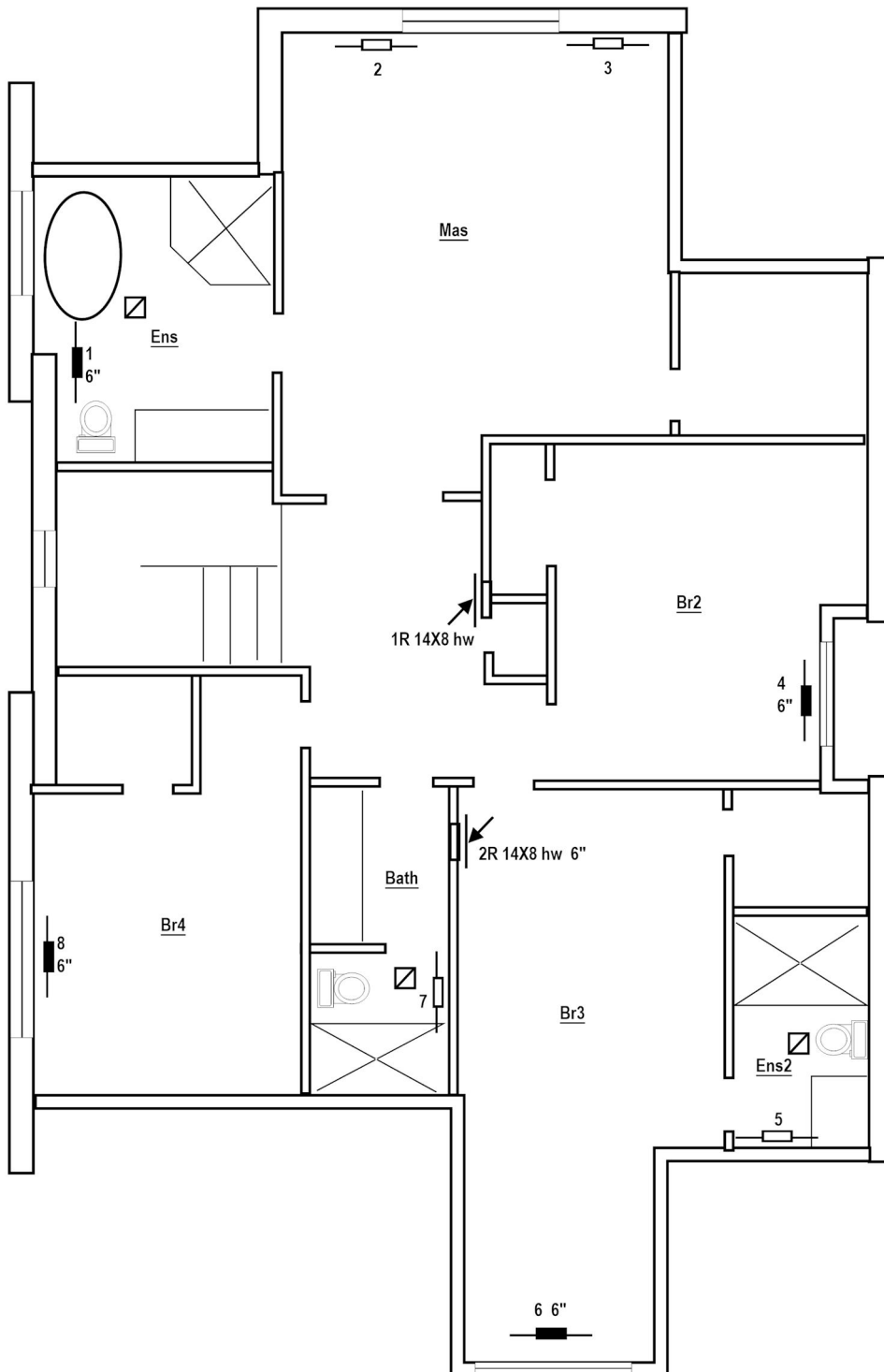
Alexis Dearie-Vonk
 Alexis Dearie-Vonk 27098 3986
 BCIN HRAI

Type	4001 Harold Opt
Floor	Basement
Scale	3/16"=1'0"
Date	Mar-18
Revised	

NewRes HVAC Design	
9 Hurontario st Orangeville On L9W 1Y8 Phone (416) 320-5870	
Client	Esquire
LO#	9177



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	4001 Harold Opt	NewRes HVAC Design 9 Hurontario st Orangeville On L9W 1Y8 Phone (416) 320-5870
Input		Output			Floor	First	
Cooling		Fan			Scale	3/16"=1'0"	
Tons		Cfm			Date	Mar-18	
No. of Runs		S/A			Client	Esquire	
2nd Floor					Revised	LO#	
1st Floor						9177	
Basement							



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. <u>Alexis Dearie-Vonk</u> Alexis Dearie-Vonk 27098 3986 BCIN HRAI
Input		BTU Output BTU		
Cooling		Fan Tons Cfm		
No. of Runs		S/A R/A		
2nd Floor				
1st Floor				
Basement				

Type	4001 Harold Opt 2nd	NewRes HVAC Design 9 Hurontario st Orangeville On L9W 1Y8 Phone (416) 320-5870
Floor	Second	
Scale	3/16"=1'0"	
Date	Mar-18	Client Esquire
Revised		LO# 9177

MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL

Housetype 4001 Harold Opt

File # 9177

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 1.08=	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	5	10.6 cfm	53
Other Rooms	4	10.6 cfm	42.4
Room Count cfm			159

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

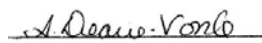
Housetype	
☒	I - Type a or b appliances only, no solid fuel
☐	II - Type I with solid fuel (including fireplace)
☐	III - Type C appliance
☐	IV - Type I or II with electric space heat
☐	Other - Type I,II,or IV no forced air

Supplemental Ventilation Capacity	
TVC room or air change (which larger)	159
Less Principal Exhaust Capacity (HRV)	64
Required Supp.Vent Capacity CFM	95

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"
Ens2	50	Broan ZB80M	5"
all fans HVI listed			

HRV-Principal Ventilation	
Model	
RNC Lifebreath 155	
30 L/S	64 cfm
ASE	84

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	
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

Alexis Dearie-Vonk

Customer Esquire
Housetype 4001 Harold Opt
File # 9177
Date Mar-18
Township Ajax

	Eff	Ens		Mas		Br2		Br3		Bath		Br4		Great		Kit		Laun		Liv		Foy		Pwd		Ens2												Bsmt	
	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	Act	Loss	Act	Loss	Act	Loss	Act	Loss	Act	Loss
Width	17.0	9		15		13		10		5		12		17		15		15		12		11		11		6												36	
Length		18		16		14		16		12		15		17		22		5		15		8		10		14											36		
Area		162		240		182		160		60		180		289		330		75		180		88		110		84												1296	
Height		8		8		8		8		8		8		9		9		9		12		9		9		8											8		
LinFtWall		27		28		16		18		5		27		36		37		20		38		16		10		20												178	
Gr.Wall		216		224		128		144		40		216		324		333		180		456		144		90		160													
Net Wall		186	830	200	893	112	500	114	509	40	179	186	830	250	1116	267	1192	180	803	400	1785	116	518	78	348	160	714												
Windows																																							
E,W				24	511			30	639					28	596	66	1405			20	426																	8	170
S		30	639									30	639	46	979					36	766	28	596	12	255													8	170
N					16	341																																	
Skylight	3.57																																						
Door	4																21	399			32	608																	
Ceiling	59.2	162	208	240	308	182	234	160	205	60	77	180	231	22	28	22	28			180	231					84	108												
Cold Flr	29.8							160	408																	84	214												
Header	17.0													36	148	37	152	20	82			16	66	10	41												178	731	
HL bgcr																																						5398	
SlabHLbgcr																																							
People/App			1		1		1					1		1		3		2																					
HL agcr			1677		1711		1074		1761		256		1700		2867		2777		1284		3208		1787		645	1036													
HL airr		2	581	2	593	2	372	2	610	2	89	2	589	1	1093	1	1058	1	490	1	1223	1	620	1	246	2	359											7984	
HL dr								224	237																	84	140												
Tot.Rm.Loss BTU		2258		2305		1446		2608		344		2289		3960		3835		1774		4431		2407		890		1535												14454	

HL airb= 33448 X 0.018 X 76 X 0.3490 4680 W 15969 BTU
BasementHLR 1582 W X 3.41 5398 BTU

HLairr Multipliers

2nd BTU (0.2)	9214	0.35
1st BTU (0.3)	12569	0.38
Bsmt BTU (0.5)	6470	1.23

All Calculations based on CAN/CSAF280 and HRAI Digest Standards

Total Structure Heat Loss 44537
Mech.Vent Loss 1576
TOTAL HEAT LOSS BTU 46113

NEWRES HVAC DESIGN

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

Heat Gain Calculation

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

Alexis Dearie-Vonk

Customer
Housetype
File #
Date
Township

Esquire
4001 Harold Opt
9177
Mar-18
Ajax

	Fac	Ens		Mas		Br2		Br3		Bath		Br4		Great		Kit		Laun		Liv		Foy		Pwd		Ens2										Bsmt	
		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	17.03	9		15		13		10		5		12		17		15		15		12		11		11		6										36	
Length		18		16		14		16		12		15		17		22		5		15		8		10		14									36		
Area		162		240		182		160		60		180		289		330		75		180		88		110		84										1296	
Height		8		8		8		8		8		8		9		9		9		12		9		9		8										8	
LinFtWall		27		28		16		18		5		27		36		37		20		38		16		10		20										178	
Gr.Wall		216		224		128		144		40		216		324		333		180		456		144		90		160											
Net Wall		186	44	200	47	112	26	114	27	40	9	186	44	250	59	267	63	180	42	400	94	116	27	78	18	160	38										
Windows																																					
E,W		27			24	656			30	820					28	765	66	1804			20	547														8	219
S		18	30	545									30	545	46	836					36	654	28	509	12	218										8	145
N		11					16	174																													
Skylight		49																																			
Door		4																21	21			32	32														
Ceiling	59.22	162	211	240	312	182	237	160	208	60	78	180	234	22	29	22	29			180	234				84	109											
Cold Flr	29.8							160	-5																84	-3											
Header	17.03													36	8	37	8	20	4			16	3	10	2										178	38	
HG svr			56		72		31		74		6		58		120		134		5		108		40		17		10									28	
HG dr								471																													
Total Cond			800		1015		437		1050		87		823		1696		1904		68		1529		572		239		144									403	
Air Leak.			40		51		22		52		4		41		85		95		3		76		28		12		7									20	
Peop/App				1	240		1	240		1	240		1	240		1	1000		3	1600		2	800														
HG sr		896		1377		730		1887		98		1162		2901		3733		871		1713		640		267		161										451	

HG salb= 33447.5 X 0.018 X 11 X 0.081 157 W 536 BTU
Mech. Vent Gain 760 BTU HG cb 10765 BTU
All Calculations based on CAN/CSAF280 and HRAI Digest Standards

Total Structure Heat Gain 16888
Latent Load Multiplier 1.3
Total Heat Gain BTU 21955

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

Alexis Dearie-Vonk BCIN# 27098 HRAI# 3986

Housetype
File #
Date
Township

4001 Harold Opt
9177
Mar-18
Ajax

[illegible]

Trunk	X		Y	Z					
Inlet #	2R	4R	1R	5R	3R				
CFM	90	140	140	90	325				
Inlet Size	6"	14X8	14X8	6"	30X8				
Act&Eff Len	195	170	190	200	170				
Adj.Press.	0.06	0.06	0.06	0.06	0.06				
Tr.Fl.Rate		230	370		785				
Tr.Width		8	12		22				
Tr.Height		8	8		8				
Velocity		518	555		642				

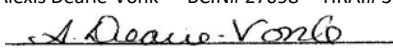
Equipment	
Manufacturer	Goodman
Furnace	GMCE96060
Output	57600
AirFlow	785
AC Size	2

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 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:	4001 Harold Opt				Site:		
Address:					Lot:		
City:	Ajax				Postal Code:		
Calculations Based On							
Dimensional Info. Based on:				Hunt Design			
Attachment:	Detached			Front Face:	East	Assumed?	Yes
# of Stories:	2+Bsmt			Air Tight:	Very Tight	Assumed?	Yes
Weath Loc:	Ajax	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:43.85 ST ran:10
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			
Name:	Alexis Dearie-Vonk			qualified as an "other designer" as required by the OBC 3.2.5			
Company:	New Res Hvac Design			as it relates to residential HVAC design.			
Address:	9 Hurontario Street			Alexis Dearie-Vonk BCIN# 27098 HRAI# 3986			
City:	Orangeville ON						
Postal Code:	L9W 1Y8						
Phone:	416-320-5870						
Email:	alexis_dearie@hotmail.com						

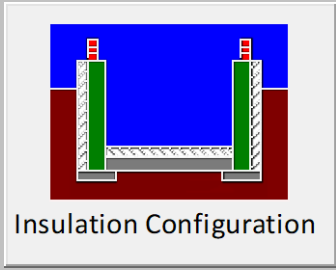
Envelope Air Leakage Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario ▼			
Region:	Atx ▼			
Weather Station Location:	Open flat terrain, grass ▼			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban forest ▼			
Walls:	Urban ▼			
Flue:	Hwy ▼			
Highest Ceiling Height (m):	8.1			
Building Configuration				
Type:	Detached ▼			
Number of Stories:	Two ▼			
Foundation:	Full ▼			
House Volume (m ³):	947			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (ACH=3.57) ▼			
Custom BDT Data:	ELA @ 10 Pa. ▼ 1198.0 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):		0.349		
Cooling Air Leakage Rate (ACH/H):		0.081		

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, clay	▼
Water Table:	Normal (7-10 m, 23-33 Ft)	▼
Foundation Dimensions		
Floor Length (m):	10.1	 Insulation Configuration
Floor Width (m):	17.1	
Exposed Perimeter (m):	54.4	
Wall Height (m):	2.5	
Depth Below Grade (m):	1.9	
Window Area (m ²):	1.1	
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):		1582