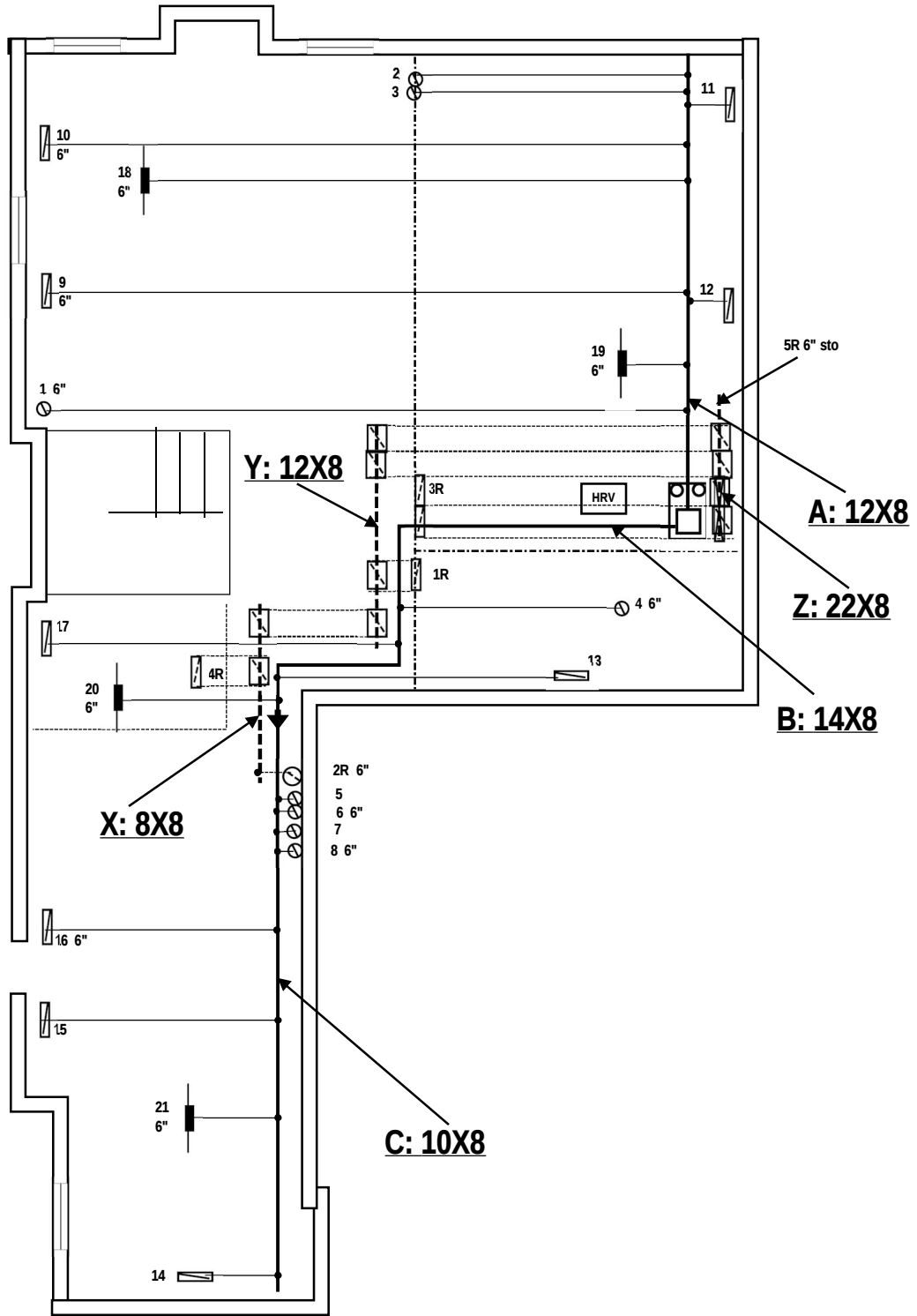


433' 0"



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: 46182 BTU
Heat Gain: 21968 BTU

2617 SF

Make	UNIT	DATA
Goodman	Model	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

Floor Basement

Scale 3/16"=1'0"

Date Mar-18

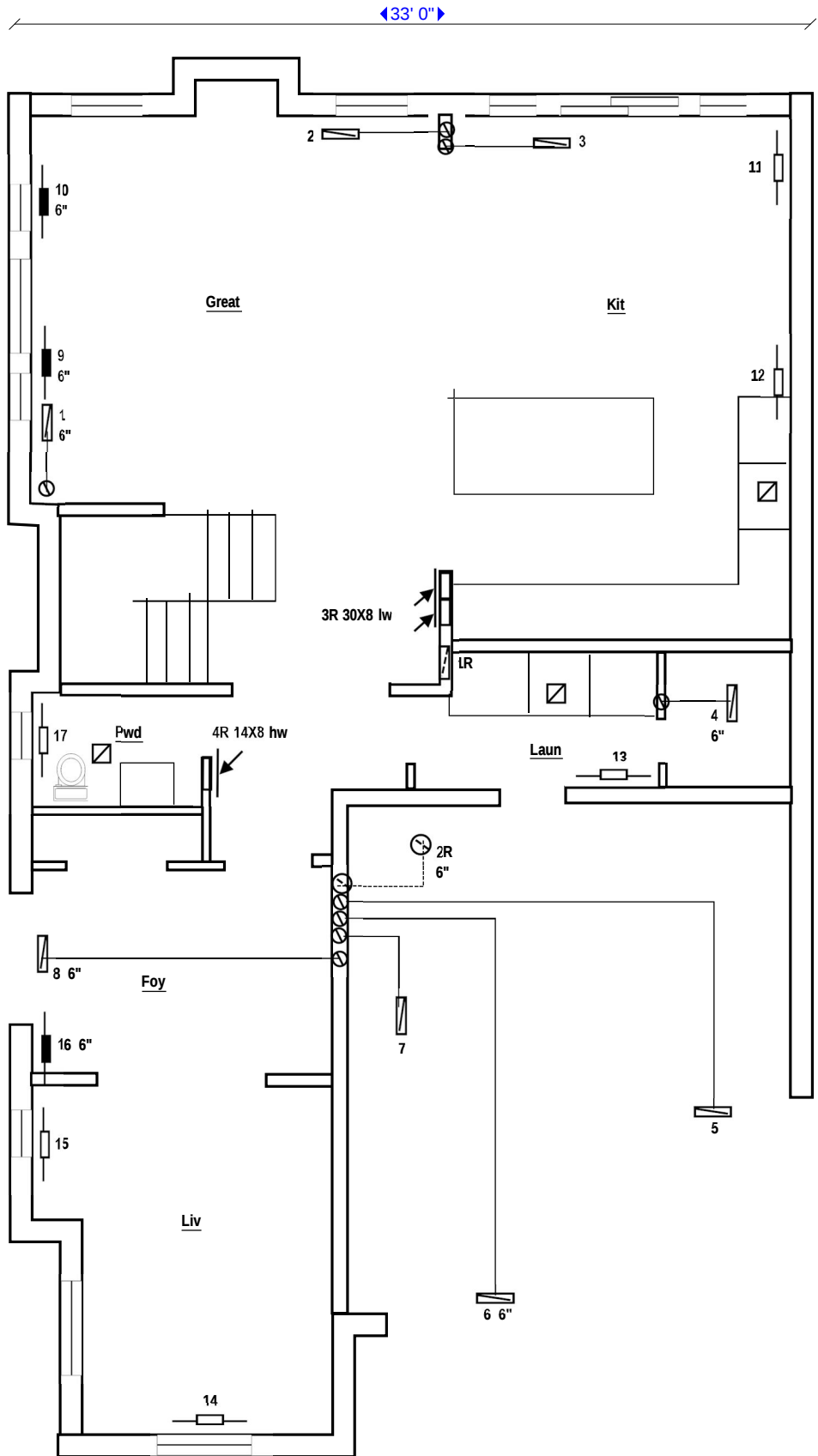
Revised

NewRes
HVAC Design

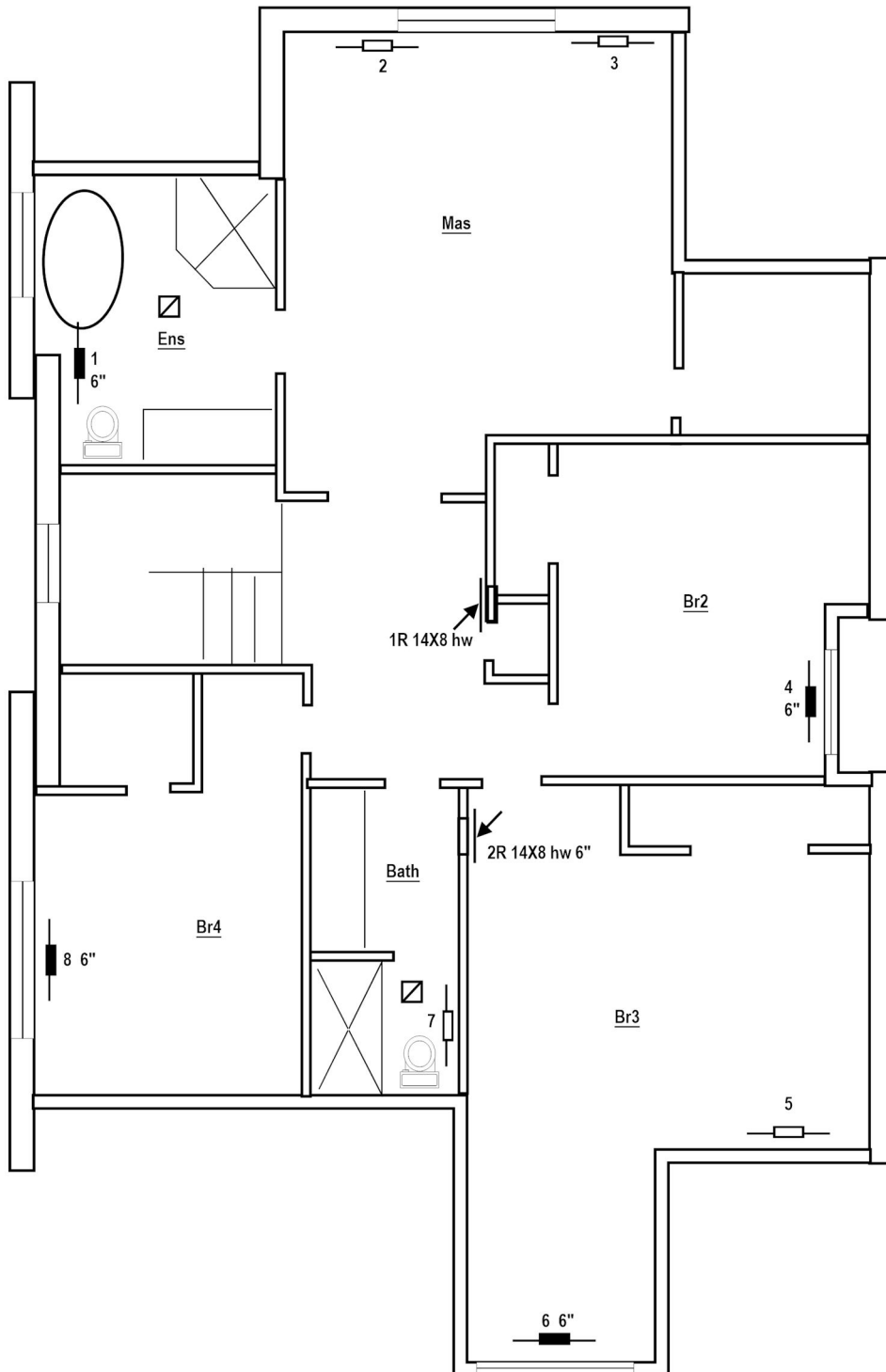
9 Hurontario st Orangeville On L9W 1Y8
Phone (416) 320-5870

Client Esquire

LO# 9176



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> Alexis Dearie-Vonk 27098 3986 BCIN HRAI	Type	4001 Harold		NewRes HVAC Design 9 Hurontario st Orangeville On L9W 1Y8 Phone (416) 320-5870
Input		BTU			Floor	First		
Cooling		Fan			Scale	3/16"=1'0"		
Tons		Cfm			Date	Mar-18		
No. of Runs		S/A			R/A		Client	
2nd Floor							Esquire	
1st Floor							LO#	
Basement							9176	



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	Type	4001 Harold	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		Mar-18
2nd Floor						Revised		
1st Floor							Client	Esquire
Basement							LO#	9176

MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL

Housetype 4001 Harold

File # 9176

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	4	10.6 cfm	42.4
Other Rooms	4	10.6 cfm	42.4
Room Count cfm			148.4

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)	148
Less Principal Exhaust Capacity (HRV)	64
Required Supp.Vent Capacity CFM	84

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		
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 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
File # 9176
Date Mar-18
Township Ajax

	Eff	Ens		Mas		Br2		Br3		Bath		Br4		Great		Kit		Laun		Liv		Foy		Pwd														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		
Width	17.0	9		15		13		16		5		12		17		15		15		12		11		11													36		
Length		18		16		14		14		12		15		17		22		5		15		8		10												36			
Area		162		240		182		224		60		180		289		330		75		180		88		110													1296		
Height		8		8		8		8		8		8		9		9		9		12		9		9													8		
LinFtWall		27		28		16		42		5		27		36		37		20		38		16		10													178		
Gr.Wall		216		224		128		336		40		216		324		333		180		456		144		90															
Net Wall		186	830	200	893	112	500	306	1366	40	179	186	830	250	1116	267	1192	180	803	400	1785	116	518	78	348														
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	224	287	60	77	180	231	22	28	22	28			180	231																		
Cold Flr	29.8							224	571																														
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		2863		256		1700		2867		2777		1284		3208		1787		645														
HL airr		2	577	2	589	2	370	2	985	2	88	2	585	1	1093	1	1058	1	490	1	1223	1	615	1	246												7984		
HL dr								224	385																														
Tot.Rm.Loss BTU		2254		2300		1444		4233		343		2285		3960		3835		1774		4431		2403		890													14454		

HL airb=33448 X 0.018 X 76 X 0.3490

4680W15969BTU

BasementHLR1582W X 3.415398BTU

HLairr Multipliers

2nd BTU (0.2)	9280	0.34
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 Loss44607

Mech.Vent Loss1576

TOTAL HEAT LOSS BTU46182

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 Esquire
Housetype 4001 Harold
File # 9176
Date Mar-18
Township Ajax

	Fac	Ens		Mas		Br2		Br3		Bath		Br4		Great		Kit		Laun		Liv		Foy		Pwd												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		
Width	17.03	9		15		13		16		5		12		17		15		15		12		11		11											36		
Length		18		16		14		14		12		15		17		22		5		15		8		10											36		
Area		162		240		182		224		60		180		289		330		75		180		88		110											1296		
Height		8		8		8		8		8		8		9		9		9		12		9		9											8		
LinFtWall		27		28		16		42		5		27		36		37		20		38		16		10											178		
Gr.Wall		216		224		128		336		40		216		324		333		180		456		144		90													
Net Wall		186	44	200	47	112	26	306	72	40	9	186	44	250	59	267	63	180	42	400	94	116	27	78	18												
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	224	291	60	78	180	234	22	29	22	29			180	234																
Cold Flr	29.8							224	-8																												
Header	17.03													36	8	37	8	20	4		16	3	10	2									178	38			
HG svr			57		72		31		83		6		58		120		135		5		108		40		17										28		
HG dr								499																													
Total Cond			800		1015		437		1176		87		823		1696		1904		68		1529		572		239										403		
Air Leak.			40		51		22		59		4		41		85		95		3		76		29		12										20		
Peop/App				1	240		1	240		1	240		1	240		1	1000		3	1600		2	800														
HG sr		896		1378		730		2057		98		1162		2901		3733		871		1713		641		267											451		

HG salb= 33447.5 X 0.018 X 11 X 0.081 157 W 536 BTU
Mech. Vent Gain 760 BTU HG cb 10747 BTU
All Calculations based on CAN/CSAF280 and HRAI Digest Standards

Total Structure Heat Gain 16899
Latent Load Multiplier 1.3
Total Heat Gain BTU 21968

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

Alexis Dearie-Vonk BCIN# 27098 HRAI# 3986

Housetype
File #
Date
Township

4001 Harold
9176
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				

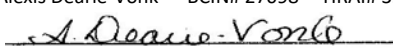
Equipment	
Manufacturer	Goodman
Furnace	GMCE96060
Output	57600
AirFlow	785
AC Size	2

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 and may not be used by any other person without authorization. Documents for permit and/or construction are signed in red						Esquire		Project #
Building Location								
Model:	4001 Harold				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+Bsm't				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 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							

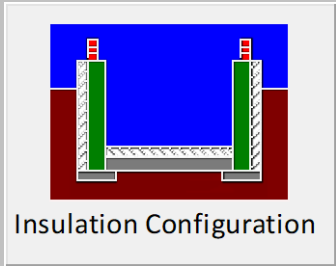
Envelope Air Leakage Calculator

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