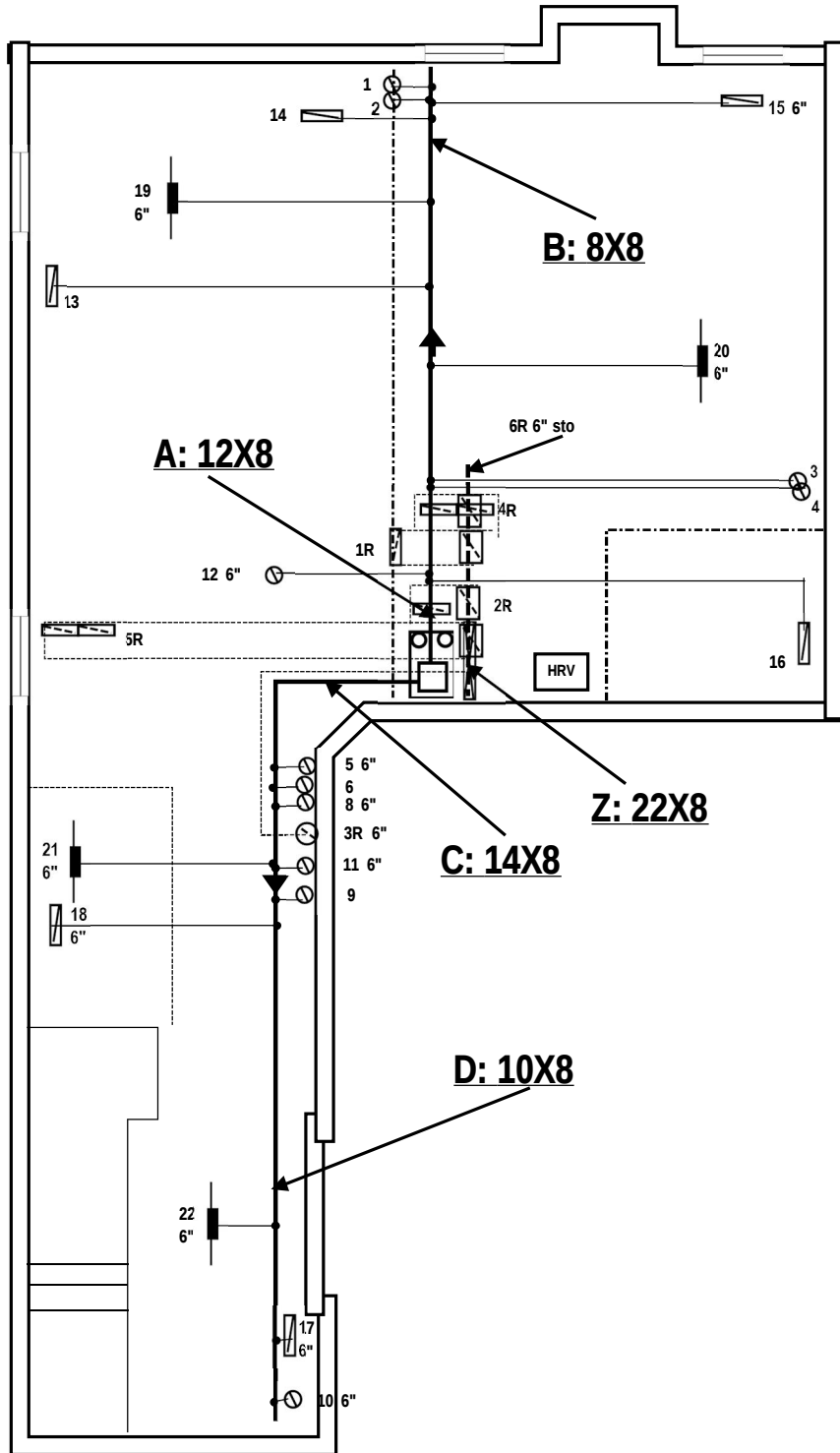


30' 10"



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: 46259 BTU

Heat Gain: 24261 BTU

2614 SF

Make	UNIT	DATA	Model
Goodman			GMEC96060
Input	60000	BTU	Output 57600 BTU
Cooling	2	Tons	Fan 785 Cfm
No. of Runs		S/A	R/A
2nd Floor	11		3
1st Floor	6		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 3705 William

Floor Basement

Scale 3/16"=1'0"

Date Mar-18

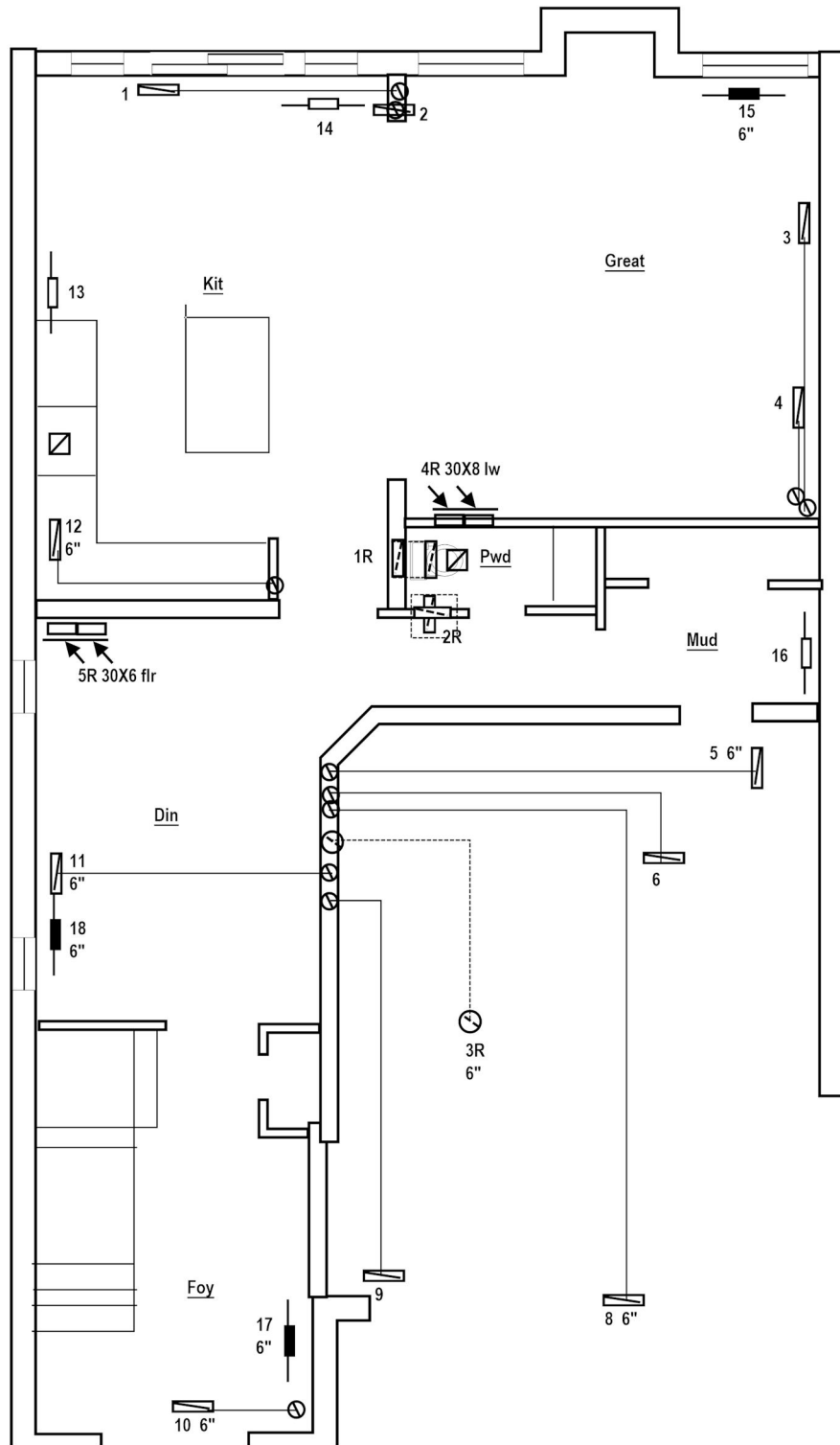
Revised

NewRes
HVAC Design

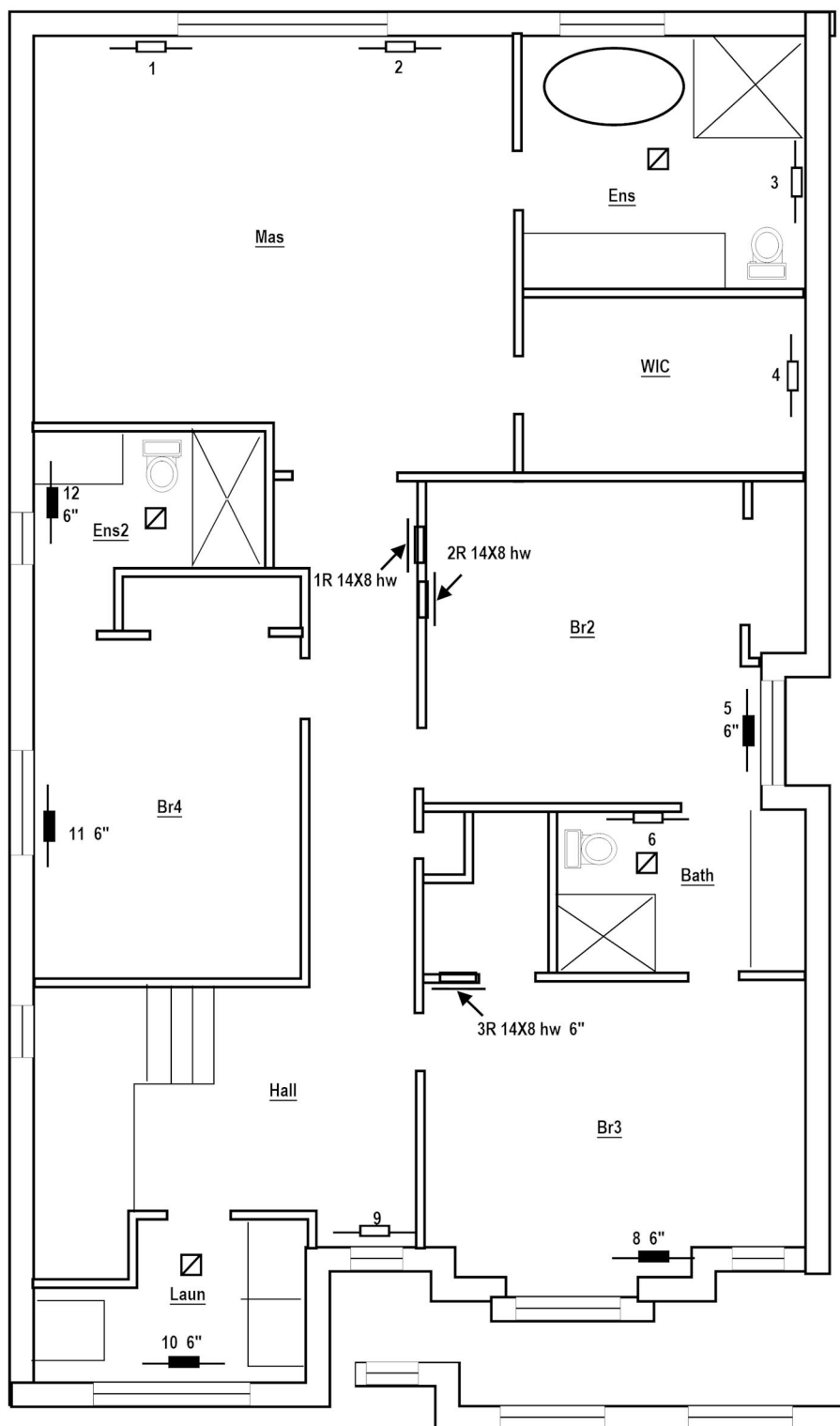
9 Hurontario st Orangeville On L9W 1Y8
Phone (416) 320-5870

Client Esquire

LO# 9174



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	3705 William	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	Client
No. of Runs	S/A	R/A			Revised		LO#
2nd Floor						9174	
1st Floor							
Basement							



All runs 5" unless otherwise specified

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	3705 William	NewRes HVAC Design 9 Hurontario st Orangeville On L9W 1Y8 Phone (416) 320-5870
Make	Model			Floor	Second	
Input	BTU	Output		Scale	3/16"=1'0"	
Cooling	Tons	Fan		Date	Mar-18	
No. of Runs	S/A	R/A		Revised		Client
2nd Floor						Esquire
1st Floor						LO#
Basement						9174

MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL

Housetype 3705 William

File # 9174

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 1.08=	950	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	3	10.6 cfm	31.8
Bath & Kitchen	5	10.6 cfm	53
Other Rooms	4	10.6 cfm	42.4
Room Count cfm			169.6

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

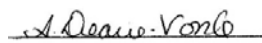
Housetype	
☒	I - Type a or b appliances only, no solid fuel
☐	II - Type I with solid fuel (including fireplace)
☐	III - Type C appliance
☐	IV - Type I or II with electric space heat
☐	Other - Type I,II,or IV no forced air

Supplemental Ventilation Capacity	
TVC room or air change (which larger)	170
Less Principal Exhaust Capacity (HRV)	80
Required Supp.Vent Capacity	CFM 90

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	
37.5 L/S	80 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 3705 William
File # 9174
Date Mar-18
Township Ajax

	Eff	Mas		Ens		WIC		Br2		Bath		Br3		Hall		Laun		Br4		Ens2		Kit		Great		Mud/Pwd		Foy		Din												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	Act	Loss	Act	Loss	
Width	17.0	19		10		10		13		13		15		14		10		11		11		14		16		16		12		11													33	
Length		15		8		6		12		5		12		8		6		13		6		19		17		6		16		16												33		
Area		285		80		60		156		65		180		112		60		143		66		266		272		96		192		176												1089		
Height		8		8		8		8		8		8		8		10		8		8		9		9		9		9		9												8		
LinFtWall		34		18		6		16		6		30		14		18		13		6		33		35		22		44		26												166		
Gr.Wall		272		144		48		128		48		240		112		180		104		48		297		315		198		396		234														
Net Wall		240	1071	130	580	48	214	112	500	48	214	200	893	90	402	138	616	88	393	40	179	231	1031	267	1192	198	884	368	1642	210	937													
Windows																																												
E,W		32	681	14	298							40	852	12	255	42	894					66	1405	48	1022			28	596												8	170		
S														10	213			16	341	8	170								24	511										8	170			
N								16	341																																			
Skylight	3.57																																											
Door	4																								21	399	32	608																
Ceiling	59.2	285	366	80	103	60	77	156	200	65	83	180	231	112	144	60	77	143	184	66	85																							
Cold Flr	29.8							80	204	65	166	180	459	60	153																													
Header	17.0																				33	136	35	144	22	90	44	181	26	107										166	682			
HL bgcr																																											5309	
SlabHLbgcr																																												
People/App		1						1				1				2		1			3		1																					
HL agcr			2118		981		291		1245		463		2434		1167		1587		917		434		2571		2357		1373		3027		1555													
HL airr		2	552	2	256	2	76	2	325	2	121	2	635	2	304	2	414	2	239	2	113	1	671	1	986	1	574	1	1266	1	650											7586		
HL dr								80	157	65	58	180	307	60	147																													
Tot.Rm.Loss BTU		2670		1237		367		1726		643		3376		1618		2001		1156		547		3242		3343		1947		4293		2205												13918		

HL airb=

31510 X 0.018 X 76 X 0.3520

4447 W

BasementHLR

1556 W

X 3.41

15173 BTU

5309 BTU

Total Structure Heat Loss

44289

Mech.Vent Loss

1970

TOTAL HEAT LOSS BTU

46259

HLairr Multipliers

2nd BTU (0.2)	11636	0.26
1st BTU (0.3)	10884	0.42
Bsmt BTU (0.5)	6332	1.20

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 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 3705 William
File # 9174
Date Mar-18
Township Ajax

		Mas		Ens		WIC		Br2		Bath		Br3		Hall		Laun		Br4		Ens2		Kit		Great		Mud/Pwd		Foy		Din								Bsmt			
	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	Act	Gain	Act	Gain	Act	Gain	Act	Gain	Act	Gain	Act	Gain	Act	Gain
Width	17.03	19		10		10		13		13		15		14		10		11		11		14		16		16		12		11										33	
Length		15		8		6		12		5		12		8		6		13		6		19		17		6		16		16									33		
Area		285		80		60		156		65		180		112		60		143		66		266		272		96		192		176									1089		
Height		8		8		8		8		8		8		8		10		8		8		9		9		9		9		9									8		
LinFtWall		34		18		6		16		6		30		14		18		13		6		33		35		22		44		26									166		
Gr.Wall		272		144		48		128		48		240		112		180		104		48		297		315		198		396		234											
Net Wall		240	56	130	31	48	11	112	26	48	11	200	47	90	21	138	32	88	21	40	9	231	54	267	63	198	47	368	86	210	49										
Windows																																									
E,W		27	32	875	14	383						40	1093	12	328	42	1148						66	1804	48	1312			28	765									8	219	
S		18												10	182			16	291	8	145								24	436								8	145		
N		11						16	174																																
Skylight	49																																								
Door	4																								21	21	32	32													
Ceiling	59.22	285	371	80	104	60	78	156	203	65	85	180	234	112	146	60	78	143	186	66	86																				
Cold Flr	29.8							80	-3	65	-2	180	-6	60	-2																										
Header	17.03																					33	7	35	8	22	5	44	10	26	6							166	36		
HG svr			107		43		7		33		8		113		56		104		41		20		154		114		6		74		40								33		
HG dr								331		1		550		153																											
Total Cond			1302		517		89		401		94		1368		675		1259		497		241		1866		1382		72		893		491								400		
Air Leak.			58		23		4		18		4		61		30		56		22		11		83		61		3		40		22								18		
Peop/App		1	240					1	240			1	240			2	800	1	240			3	1700	1	1200																
HG sr		1707		583		101		1022		106		2332		913		2218		759		271		3802		2757		81		1006		553										451	

HG salb= 31509.5 X 0.018 X 11 X 0.082 150 W 512 BTU
Mech. Vent Gain 950 BTU HG cb 11547 BTU
All Calculations based on CAN/CSAF280 and HRAI Digest Standards

Total Structure Heat Gain 18662
Latent Load Multiplier 1.3
Total Heat Gain BTU 24261

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

Customer Esquire
Housetype 3705 William
File # 9174
Date Mar-18
Township Ajax

Trunk	D					C					B						A													
Outlet #	10	17	22	18	9	11	21	8	6	5	1	2	15	14	19	13	20	3	4	12	16									
Outlet Loc	Laun	Foy	Bsmt	Din	Hall	Br4	Bsmt	Br3	Bath	Br2	Mas	Mas	Great	Kit	Bsmt	Kit	Bsmt	Ens	WIC	Ens2	Mud/Pwd									
BTU/RM	2001	4293	13918	2205	1618	1156	13918	3376	643	1726	2670	2670	3343	3242	13918	3242	13918	1237	367	547	1947									
# Out/Rm	1	1	4	1	1	1	4	1	1	1	2	2	1	2	4	2	4	1	1	1	1									
CFM/Outlet	35	76	62	39	29	20	62	60	11	31	24	24	59	29	62	29	62	22	7	10	35									
Act&Eff Len	145	160	165	180	185	155	160	170	185	195	155	160	170	180	185	190	145	160	170	180	185									
Adj.Press	0.09	0.08	0.08	0.07	0.07	0.08	0.08	0.08	0.07	0.07	0.08	0.08	0.08	0.07	0.07	0.07	0.09	0.08	0.08	0.07	0.07									
Pipe Size	5	6	6	5	5	5	6	5	5	5	5	5	5	5	6	5	6	5	5	5	5									
Tr.Fl.Rate					241					425						226					360									
TrunkWidth					10					14						8					12									
Tr.Height					8					8						8					8									
Velocity					434					546						508					540									

Trunk	Z									
Inlet #	6R	4R	1R	2R	5R	3R				
CFM	80	200	115	115	200	75				
Inlet Size	6"	30X8	14X8	14X8	30X6	6"				
Act&Eff Len	240	225	205	185	170	160				
Adj.Press.	0.05	0.05	0.05	0.06	0.06	0.06				
Tr.Fl.Rate						785				
Tr.Width						22				
Tr.Height						8				
Velocity						642				

Equipment	
Manufacturer	Goodman
Furnace	GMEC96060
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:	3705 Charles Ajax				Site:		
Address:					Lot:		
City:					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: 5
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 (R 17.03 Actual)			Style A:	R20ci Nominal (R21.12 Actual)		
Style B:							
Style C:							
Style D:							
Floors on Soil				Ceilings			
Style A:				Style A:	R60 Nominal (R59.22 Actual) (R27.65 Actual Ceiling with no attic)		
Style B:							
Exposed Floors				Style C:			
Style A:	R31 Nominal (R29.8 Actual)			Doors			
Style B:							
Windows				Style A:	Assumed Insulated		
Style B:							
Style C:							
Style A:	U 0.28 (R 3.57 Actual)			Style B:	Skylights		
Style B:							
Style C:							
Style D:							
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						

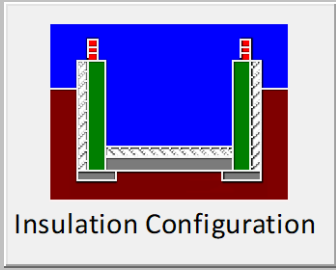
Envelope Air Leakage Calculator

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):	8.2			
Building Configuration				
Type:	Detached ▼			
Number of Stories:	Two ▼			
Foundation:	Full ▼			
House Volume (m ³):	892			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (ACH=3.57) ▼			
Custom BDT Data:	ELA @ 10 Pa. ▼ 1128.4 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):		0.352		
Cooling Air Leakage Rate (ACH/H):		0.082		

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):	9.4	 Insulation Configuration
Floor Width (m):	17.4	
Exposed Perimeter (m):	53.6	
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):		1556