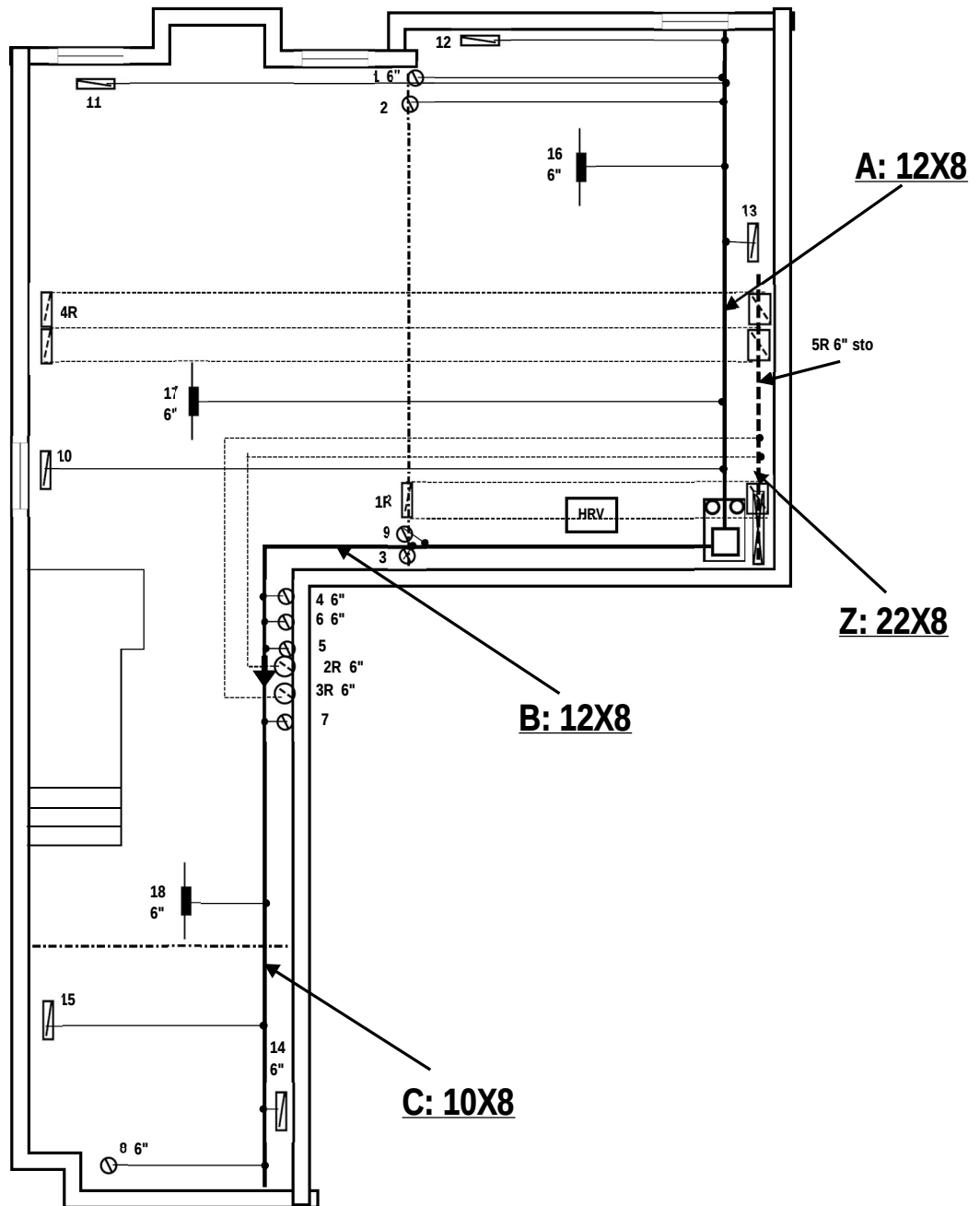


30' 10"



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: 41713 BTU

Heat Gain: 21185 BTU

2297 SF

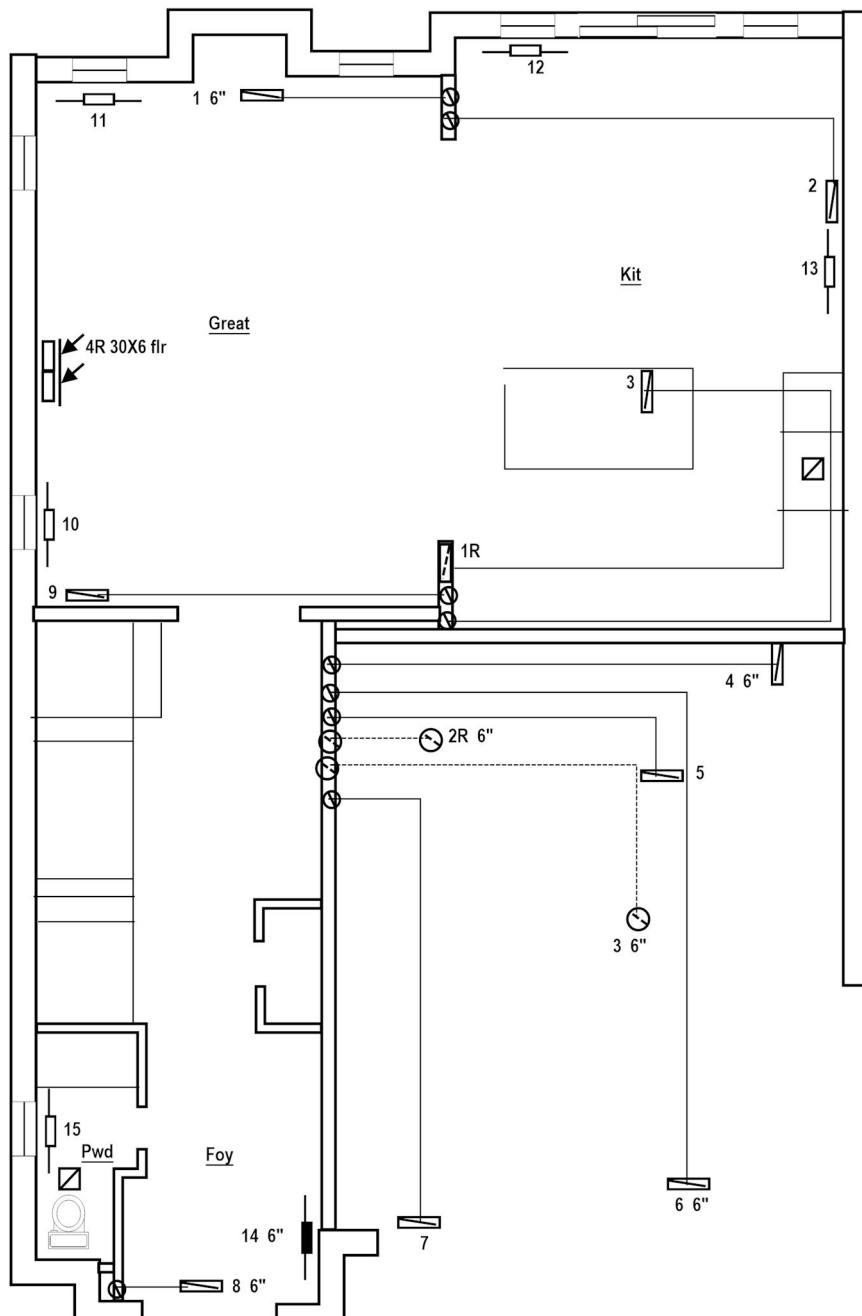
Make	UNIT DATA	Model
Goodman		GMEC96060
Input	60000 BTU	Output 57600 BTU
Cooling	2 Tons	Fan 785 Cfm
No. of Runs	S/A	R/A
2nd Floor	9	3
1st Floor	6	1
Basement	3	1

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.

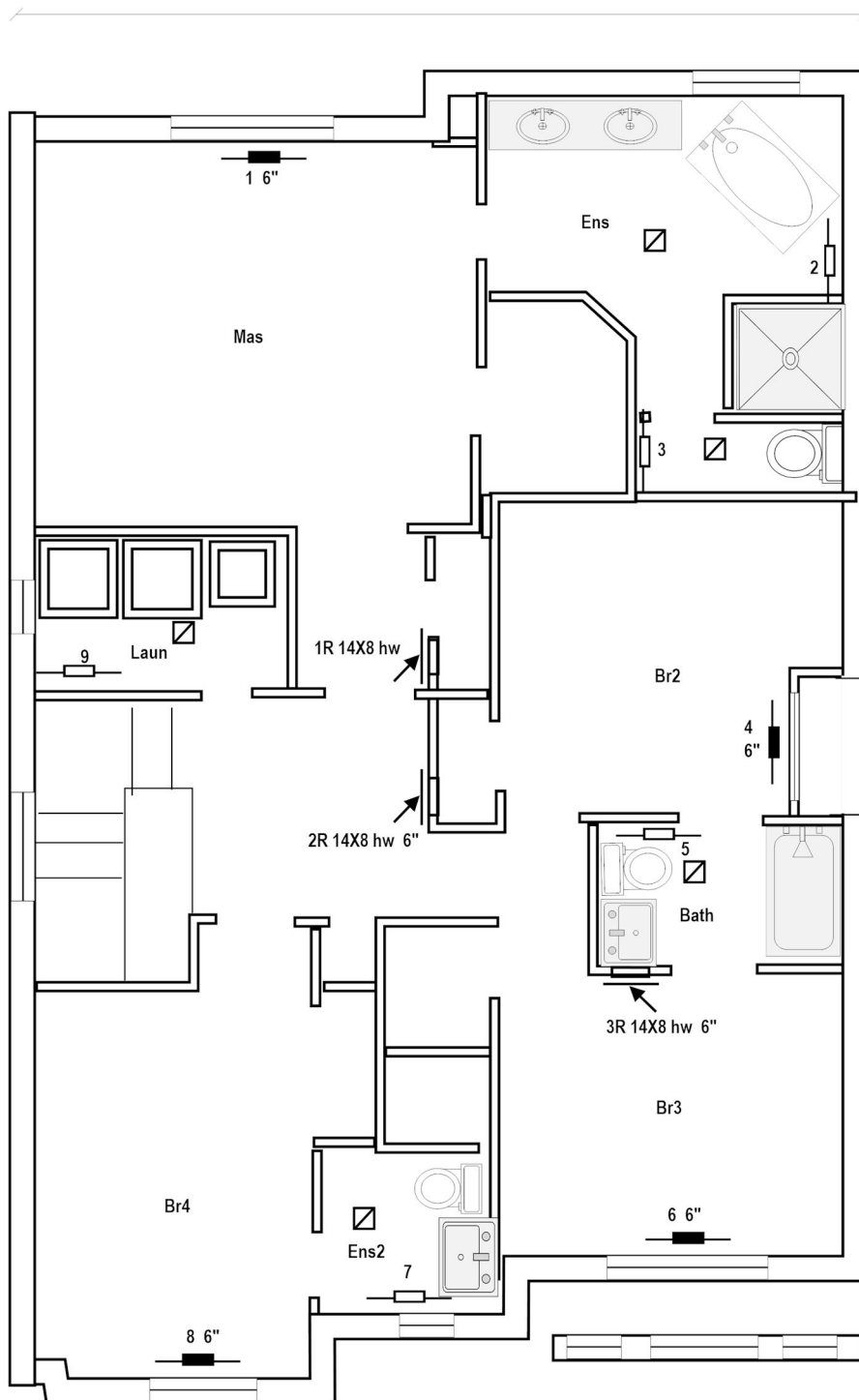
Alexis Dearie-Vonk

Alexis Dearie-Vonk 27098 3986
BCIN HRAI

Type	3701 Andrew	NewRes
Floor	Basement	HVAC Design
Scale	3/16"=1'0"	9 Hurontario st Orangeville On L9W 1Y8 Phone (416) 320-5870
Date	Mar-18	Client Esquire
Revised		LO# 9171



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	3701 Andrew		NewRes HVAC Design 9 Hurontario st Orangeville On L9W 1Y8 Phone (416) 320-5870		
Model		Model			3701 Andrew					
Input BTU		Output BTU			First					
Cooling Tons		Fan Cfm			Scale	3/16"=1'0"				
No. of Runs	S/A	R/A			Date	Mar-18				Client
2nd Floor					Revised			LO#	9171	
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	3701 Andrew	NewRes HVAC Design 9 Hurontario st Orangeville On L9W 1Y8 Phone (416) 320-5870
	Input	Output		Floor	Second	
Cooling	BTU	BTU		Scale	3/16"=1'0"	Client
	Tons	Fan		Date	Mar-18	
No. of Runs	S/A	R/A		Revised		LO#
2nd Floor						9171
1st Floor						
Basement						

MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL

Housetype 3701 Andrew

File # 9171

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	3	10.6 cfm	31.8
Room Count cfm			159

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

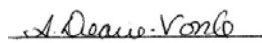
Housetype	
☒	I - Type a or b appliances only, no solid fuel
☐	II - Type I with solid fuel (including fireplace)
☐	III - Type C appliance
☐	IV - Type I or II with electric space heat
☐	Other - Type I,II,or IV no forced air

Supplemental Ventilation Capacity	
TVC room or air change (which larger)	159
Less Principal Exhaust Capacity (HRV)	80
Required Supp.Vent Capacity CFM	79

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

Heat Loss 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 BCIN# 27098 HRAI# 3986

Alexis Dearie-Vonk

Customer Esquire
Housetype 3701 Andrew
File # 9171
Date Mar-18
Township Ajax

	Eff	Mas		Ens		Br2		Bath		Br3		Ens2		Br4		Laun		Great		Kit		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		
Width	17.0	17		16		13		13		13		6		11		14		15		15		10													30		
Length		14		14		12		6		11		15		16		15		20		20		23													31		
Area		238		224		156		78		143		90		176		210		300		300		230														930	
Height		8		8		8		8		8		8		10		8		9		9		9														8	
LinFtWall		31		31		14		8		24		8		30		15		37		50		56														126	
Gr.Wall		248		248		112		64		192		64		300		120		333		450		504															
Net Wall		224	1000	232	1035	96	428	64	286	152	678	54	241	275	1227	92	411	285	1272	386	1723	468	2089														
Windows																																					
E,W		24	511	16	341						40	852	10	213	25	532			24	511	64	1362	28	596												9	192
S																	28	596	24	511			8	170												3	64
N						16	341																														
Skylight	3.57																																				
Door	4																				43	817															
Ceiling	59.2	238	305	224	287	156	200	78	100	143	184	90	116	176	226	210	270																				
Cold Flr	29.8					75	191	78	199	143	365	90	230																								
Header	17.0																	37	152	50	205	56	230											126	518		
HL bgcr																																				4883	
SlabHLbgcr																																					
People/App		1				1				1				1		2		1		3																	
HL agcr			1816		1663		1161		585		2078		799		1985		1276		2446		3290		3902														
HL airr		2	422	2	387	2	270	2	136	2	483	2	186	2	462	2	297	1	1006	1	1353	1	907													6607	
HL dr						75	143	78	72	143	256	90	98																								
Tot.Rm.Loss BTU		2238		2050		1573		793		2818		1083		2447		1573		3452		4644		4809														12263	

HL airb= 27676 X 0.018 X 76 X 0.3490

3873 W **13213** BTU
BasementHLR **1431** W X 3.41 **4883** BTU

Total Structure Heat Loss **39743**
Mech.Vent Loss **1970**
TOTAL HEAT LOSS BTU **41713**

Hlairr Multipliers	2nd BTU (0.2)	11363	0.23
	1st BTU (0.3)	9638	0.41
	Bsmt BTU (0.5)	5656	1.17

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 3701 Andrew
File # 9171
Date Mar-18
Township Ajax

		Mas		Ens		Br2		Bath		Br3		Ens2		Br4		Laun		Great		Kit		Foy/Pwd														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
Width	17.03	17		16		13		13		13		6		11		14		15		15		10														30	
Length		14		14		12		6		11		15		16		15		20		20		23													31		
Area		238		224		156		78		143		90		176		210		300		300		230													930		
Height		8		8		8		8		8		8		10		8		9		9		9													8		
LinFtWall		31		31		14		8		24		8		30		15		37		50		56													126		
Gr.Wall		248		248		112		64		192		64		300		120		333		450		504															
Net Wall		224	53	232	54	96	23	64	15	152	36	54	13	275	65	92	22	285	67	386	91	468	110														
Windows																																					
E,W		27	24	656	16	437					40	1093	10	273	25	683		24	656	64	1750	28	765												9	246	
S		18														28	509	24	436			8	145												3	55	
N		11				16	174																														
Skylight	49																																				
Door	4																			43	43																
Ceiling	59.22	238	309	224	291	156	203	78	101	143	186	90	117	176	229	210	273																				
Cold Flr	29.8					75	-3	78	-3	143	-5	90	-3																								
Header	17.03																37	8	50	11	56	12											126	27			
HG svr			95		73		37		11		122		37		91		75		108		172		100											30			
HG dr						334		27				95																									
Total Cond			1018		783		397		114		1310		400		977		804		1167		1851		1076											328			
Air Leak.			44		34		17		5		57		17		42		35		51		80		47											14			
Peop/App		1	240			1	240			1	240			1	240	2	800	1	1000	3	1600																
HG sr		1397		890		1025		156		1729		549		1350		1713		2188		3703		1223												372			

HG salb= 27676 X 0.018 X 11 X 0.081 130 W 444 BTU
Mech. Vent Gain 950 BTU HG cb 10225 BTU
All Calculations based on CAN/CSAF280 and HRAI Digest Standards

Total Structure Heat Gain 16296
Latent Load Multiplier 1.3
Total Heat Gain BTU 21185

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 3701 Andrew
File # 9171
Date Mar-18
Township Ajax

Trunk	C					B					A																			
Outlet #	8	14	15	18	7	5	6	4	3	9	12	1	11	2	16	13	17	10												
Outlet Loc	Br4	Foy/Pwd	Foy/Pwd	Bsmt	Ens2	Bath	Br3	Br2	Ens	Laun	Kit	Mas	Great	Ens	Bsmt	Kit	Bsmt	Great												
BTU/RM	2447	4809	4809	12263	1083	793	2818	1573	2050	1573	4644	2238	3452	2050	12263	4644	12263	3452												
# Out/Rm	1	2	2	3	1	1	1	1	2	1	2	1	2	2	3	2	3	2												
CFM/Outlet	48	47	47	81	21	16	56	31	20	31	46	44	34	20	81	46	81	34												
Act&Eff Len	155	160	170	175	180	155	170	180	190	195	155	170	175	185	190	195	200	205												
Adj.Press	0.08	0.08	0.08	0.07	0.07	0.08	0.08	0.07	0.07	0.07	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.06												
Pipe Size	5	5	5	6	5	5	5	5	5	5	5	5	5	5	6	5	6	5												
Tr.Fl.Rate					245					399								386												
TrunkWidth					10					12								12												
Tr.Height					8					8								8												
Velocity					442					599								579												

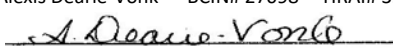
Trunk	Z									
Inlet #	4R	5R	3R	2R	1R					
CFM	375	90	90	90	140					
Inlet Size	30X6	6"	6"	6"	14X8					
Act&Eff Len	235	205	200	185	170					
Adj.Press.	0.05	0.05	0.06	0.06	0.06					
Tr.Fl.Rate					785					
Tr.Width					22					
Tr.Height					8					
Velocity					642					

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:	3701 Andrew				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:	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			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						

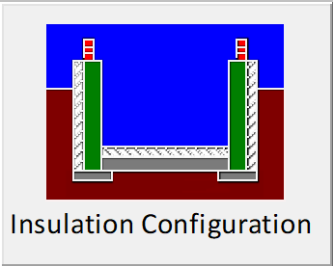
Envelope Air Leakage Calculator

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):	783			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (ACH=3.57) ▼			
Custom BDT Data:	ELA @ 10 Pa. ▼ 990.57 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):		0.349		
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):	9.1	 Insulation Configuration
Floor Width (m):	15.8	
Exposed Perimeter (m):	49.8	
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):		1431