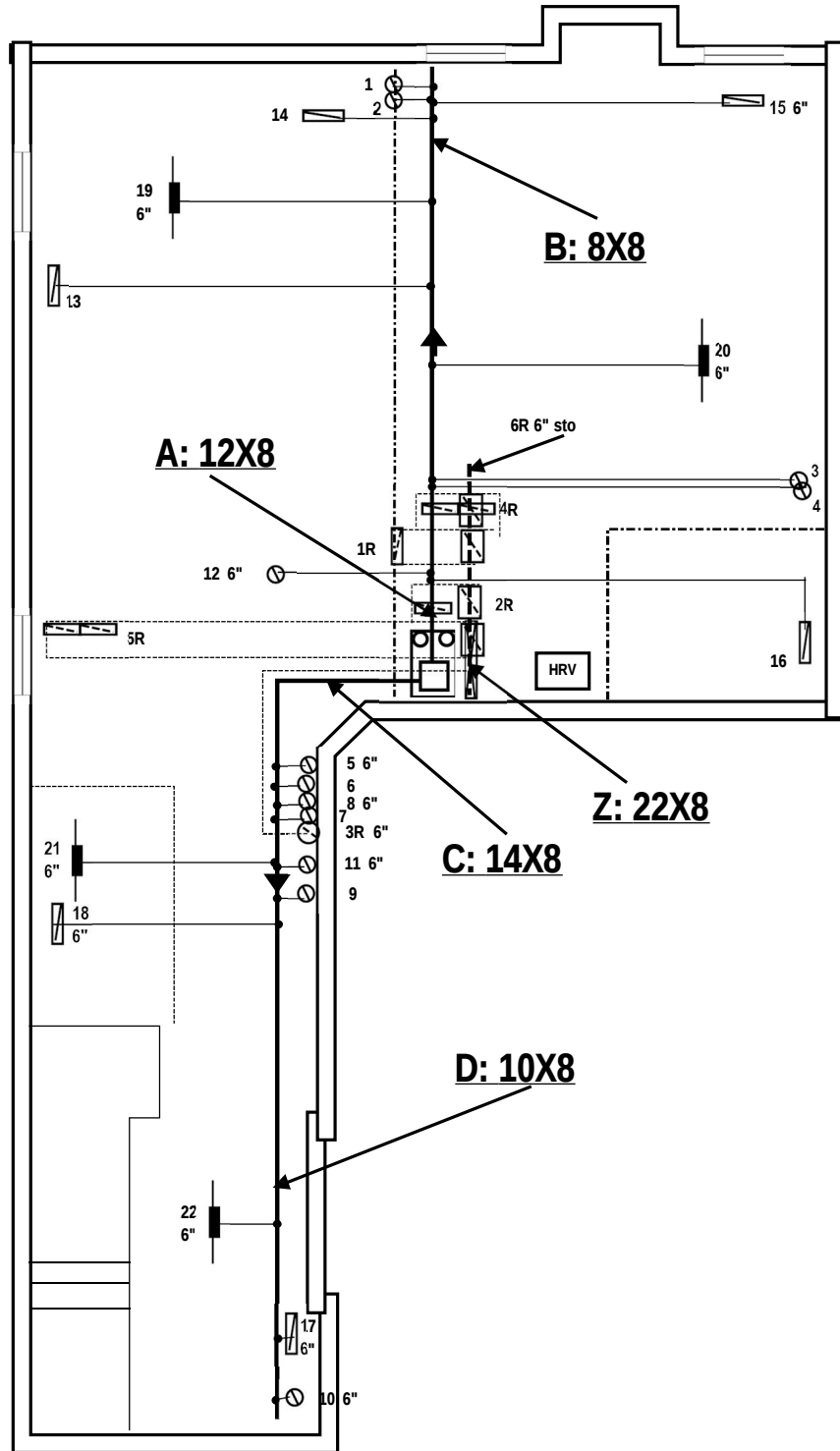


30' 10"



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: 47222 BTU

Heat Gain: 25994 BTU

2614 SF

Make	UNIT DATA	Model
Goodman	MEC96060	
Input	60000 BTU	Output 57600 BTU
Cooling	2 Tons	Fan 785 Cfm
No. of Runs	S/A	R/A
2nd Floor	12	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 Opt

Floor Basement

Scale 3/16"=1'0"

Date Mar-18

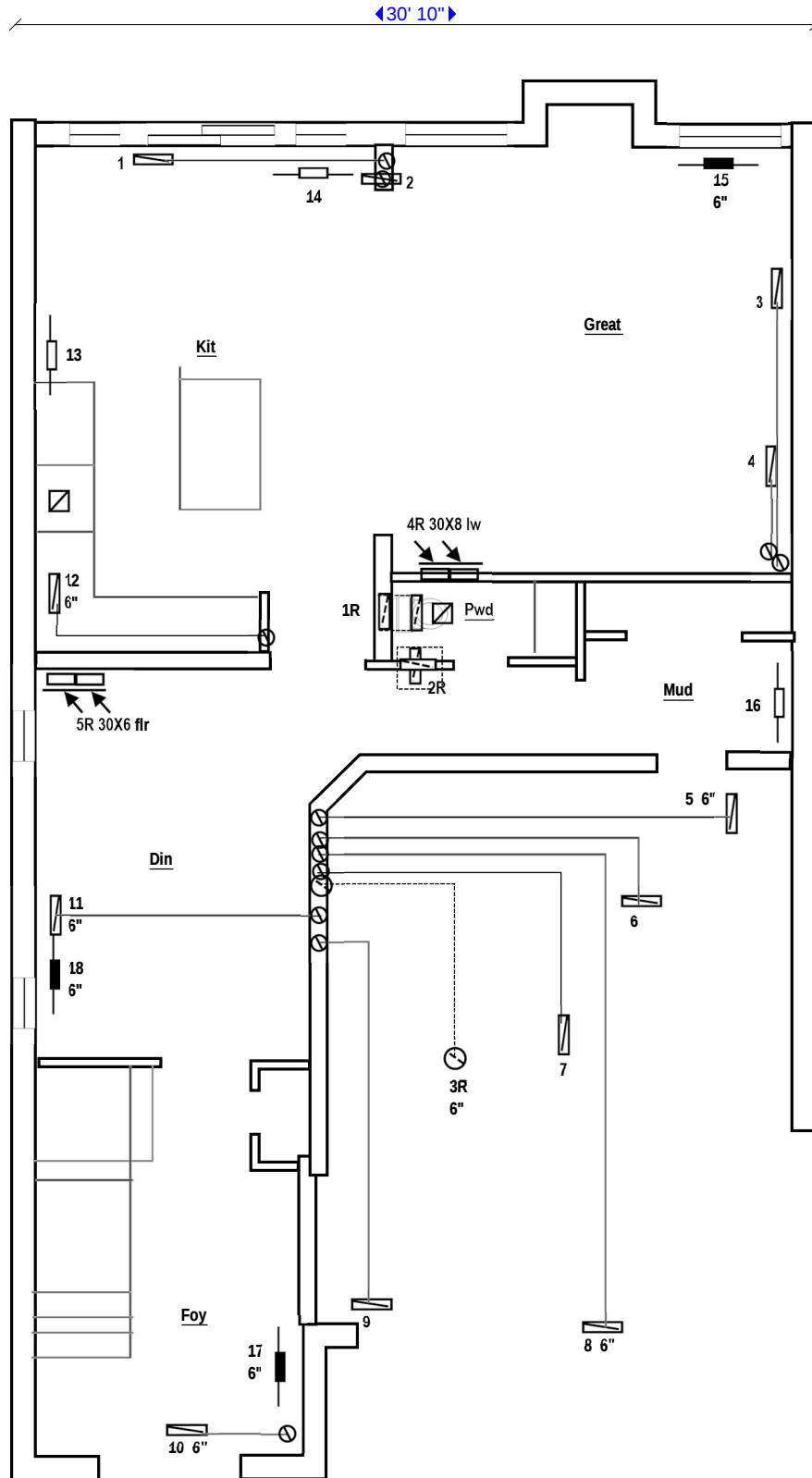
Revised

NewRes
HVAC Design

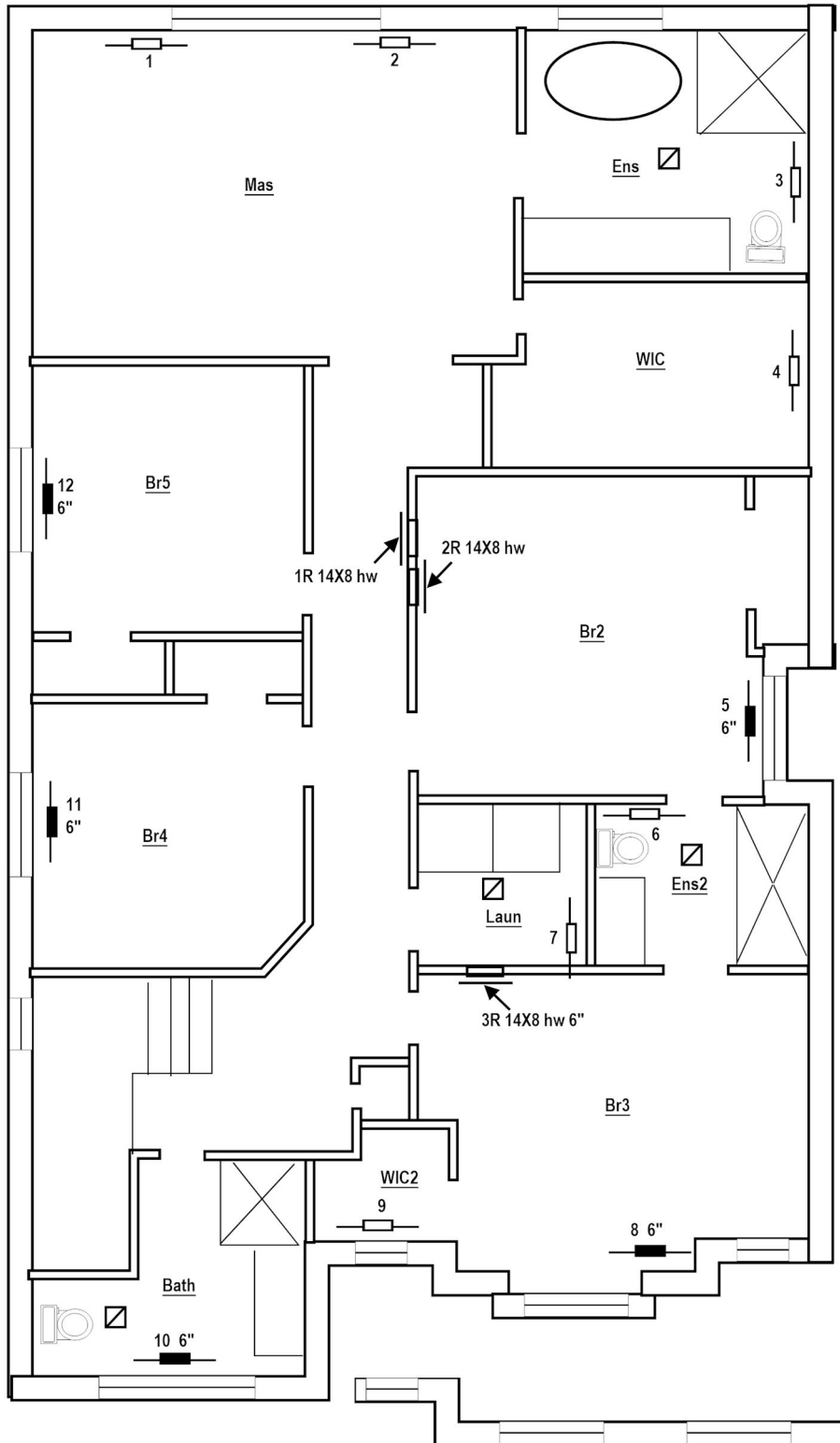
9 Hurontario st Orangeville On L9W 1Y8
Phone (416) 320-5870

Client Esquire

LO# 9175



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	3705 William 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	R/A			Revised			
2nd Floor							Client	Esquire
1st Floor							LO#	
Basement							9175	



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>		Type 3705 William Opt 2nd		NewRes HVAC Design 9 Hurontario st Orangeville On L9W 1Y8 Phone (416) 320-5870	
Input		BTU				Floor Second			
Cooling		Tons				Scale 3/16"=1'0"			
Fan		Cfm				Date Mar-18		Client Esquire	
No. of Runs		S/A		R/A		Revised		LO# 9175	
2nd Floor						Alexis Dearie-Vonk 27098 3986 BCIN HRAI			
1st Floor									
Basement									

Alexis Dearie-Vonk 27098 3986 BCIN HRAI

MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL

Housetype 3705 William Opt

File # 9175

Builder	Esquire
Address	
City	
Phone	

Heat Loss Due to Mechanical Ventilation		
PVC X DTDh X 1.08 X (1-E)=	2339	BTU
Heat Gain Due to Mechanical Ventilation		
PVC X DTDc X 1.08=	1129	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	4	10.6 cfm	42.4
Bath & Kitchen	5	10.6 cfm	53
Other Rooms	5	10.6 cfm	53
Room Count cfm			190.8

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

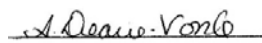
Housetype	
☒	I - Type a or b appliances only, no solid fuel
☐	II - Type I with solid fuel (including fireplace)
☐	III - Type C appliance
☐	IV - Type I or II with electric space heat
☐	Other - Type I,II,or IV no forced air

Supplemental Ventilation Capacity	
TVC room or air change (which larger)	191
Less Principal Exhaust Capacity (HRV)	95
Required Supp.Vent Capacity CFM	96

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	
45 L/S	95 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 Opt
File # 9175
Date Mar-18
Township Ajax

	Eff	Mas		Ens		WIC		Br2		Ens2		Br3		WIC		Bath		Br4		Br5		Kit		Great		Mud/Pwd		Foy		Din		Laun										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		7		15		5		10		11		11		14		16		16		12		11		6											33	
Length		13		8		6		12		5		12		8		12		11		11		19		17		6		16		16		6										33		
Area		247		80		60		156		35		180		40		120		121		121		266		272		96		192		176		36										1089		
Height		8		8		8		8		8		8		8		10		8		8		9		9		9		9		9		8										8		
LinFtWall		32		18		6		16		6		30		14		26		11		11		33		35		22		44		26		1										166		
Gr.Wall		256		144		48		128		48		240		112		260		88		88		297		315		198		396		234		8												
Net Wall		224	1000	130	580	48	214	112	500	48	214	200	893	100	446	210	937	72	321	72	321	231	1031	267	1192	198	884	368	1642	210	937	8	36											
Windows																																												
E,W		32	681	14	298								40	852	12	255	42	894					66	1405	48	1022			28	596												8	170	
S																8	170	16	341	16	341									24	511											8	170	
N							16	341																																				
Skylight	3.57																																											
Door	4																									21	399	32	608															
Ceiling	59.2	247	317	80	103	60	77	156	200	35	45	180	231	40	51	120	154	121	155	121	155											36	46											
Cold Flr	29.8							80	204	35	89	180	459	40	102																	36	92											
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		1		3		1							2													
HL agcr			1998		981		291		1245		348		2434		855		2156		817		817		2571		2357		1373		3027		1555		174											
HL airr		2	524	2	257	2	76	2	326	2	91	2	638	2	224	2	565	2	214	2	214	1	674	1	986	1	574	1	1266	1	650	2	46										7586	
HL dr								80	157	35	44	180	307	40	108																36	22												
Tot.Rm.Loss BTU		2522		1238		368		1728		484		3380		1187		2721		1031		1031		3246		3343		1947		4293		2205		241										13918		

HL airb= 31510 X 0.018 X 76 X 0.3520 4447 W 15173 BTU 44883

BasementHLR 1556 W X 3.41 5309 BTU 2339

HLairr Multipliers 2nd BTU (0.2) 11575 0.26 1st BTU (0.3) 10884 0.42 Bsmt BTU (0.5) 6332 1.20 TOTAL HEAT LOSS BTU 47222

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 Opt
File # 9175
Date Mar-18
Township Ajax

	Fac	Mas		Ens		WIC		Br2		Ens2		Br3		WIC		Bath		Br4		Br5		Kit		Great		Mud/Pwd		Foy		Din		Laun								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	Act	Gain	Act	Gain	
Width	17.03	19		10		10		13		7		15		5		10		11		11		14		16		16		12		11		6									33	
Length		13		8		6		12		5		12		8		12		11		11		19		17		6		16		16		6									33	
Area		247		80		60		156		35		180		40		120		121		121		266		272		96		192		176		36									1089	
Height		8		8		8		8		8		8		8		10		8		8		9		9		9		9		9		8									8	
LinFtWall		32		18		6		16		6		30		14		26		11		11		33		35		22		44		26		1									166	
Gr.Wall		256		144		48		128		48		240		112		260		88		88		297		315		198		396		234		8										
Net Wall		224	53	130	31	48	11	112	26	48	11	200	47	100	23	210	49	72	17	72	17	231	54	267	63	198	47	368	86	210	49	8	2									
Windows																																										
E,W		27	32	875	14	383							40	1093	12	328	42	1148					66	1804	48	1312			28	765											8	219
S		18															8	145	16	291	16	291								24	436										8	145
N		11						16	174																																	
Skylight	49																																									
Door	4																								21	21	32	32														
Ceiling	59.22	247	321	80	104	60	78	156	203	35	46	180	234	40	52	120	156	121	157	121	157											36	47									
Cold Flr	29.8							80	-3	35	-1	180	-6	40	-1																	36	-1									
Header	17.03																					33	7	35	8	22	5	44	10	26	6									166	36	
HG svr			121		50		9		39		5		132		39		145		45		45		181		134		7		86		48		5									39
HG dr								336		1		569		97																												
Total Cond			1249		517		89		401		56		1368		402		1499		465		465		1866		1382		72		893		491		47									400
Air Leak.			55		23		4		18		2		60		18		66		20		20		82		61		3		39		22		2									18
Peop/App		1	240					1	240				1	240			2	800	1	240	1	240	3	1700	1	1200						2	800									
HG sr		1664		590		102		1034		64		2370		556		2510		759		770		3828		2777		82		1019		560		854										456

HG salb= 31509.5 X 0.018 X 11 X 0.082 150 W 512 BTU

Mech. Vent Gain 1129 BTU HG cb 11663 BTU

All Calculations based on CAN/CSAF280 and HRAI Digest Standards

Total Structure Heat Gain 19995

Latent Load Multiplier 1.3

Total Heat Gain BTU 25994

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 Opt
File # 9175
Date Mar-18
Township Ajax

Trunk	D					C						B						A														
Outlet #	10	17	22	18	9	11	21	8	7	6	5	1	2	15	14	19	13	20	3	4	12	16										
Outlet Loc	Bath	Foy	Bsmt	Din	WIC	Br4	Bsmt	Br3	Laun	Ens2	Br2	Mas	Mas	Great	Kit	Bsmt	Kit	Bsmt	Ens	WIC	Br5	Mud/Pwd										
BTU/RM	2721	4293	13918	2205	1187	1031	13918	3380	241	484	1728	2522	2522	3343	3246	13918	3246	13918	1238	1187	1031	1947										
# Out/Rm	1	1	4	1	1	1	4	1	1	1	1	2	2	1	2	4	2	4	1	1	1	1										
CFM/Outlet	48	75	61	39	21	18	61	59	4	8	30	22	22	58	28	61	28	61	22	21	18	34										
Act&Eff Len	145	160	165	180	185	155	160	170	185	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	0.07	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	5	6	5	6	5	5	5	5										
Tr.Fl.Rate					243						424						220					376										
TrunkWidth					10						14						8					12										
Tr.Height					8						8						8					8										
Velocity					437						545						495					563										

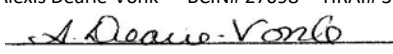
Trunk	Z									
Inlet #	6R	4R	1R	2R	5R	3R				
CFM	80	200	115	115	200	75				
Inlet Size	6"	30X8	14X8	14X8	30X6	6"				
Act&Eff Len	240	225	205	185	170	160				
Adj.Press.	0.05	0.05	0.05	0.06	0.06	0.06				
Tr.Fl.Rate						785				
Tr.Width						22				
Tr.Height						8				
Velocity						642				

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 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+Bsm't			Air Tight:	Very Tight	Assumed? Yes
Weath Loc:	Ajax	Ventilated?	Yes	Wind Exp:	Partial Shade	
HRV?	Yes			Int.Shade:	Yes	Occupants: 6
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					

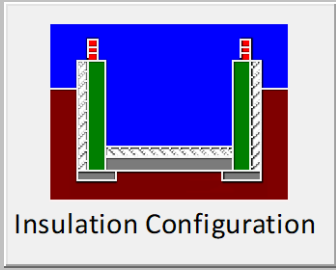
Envelope Air Leakage Calculator

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):	8.2			
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:		
	45	45		
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