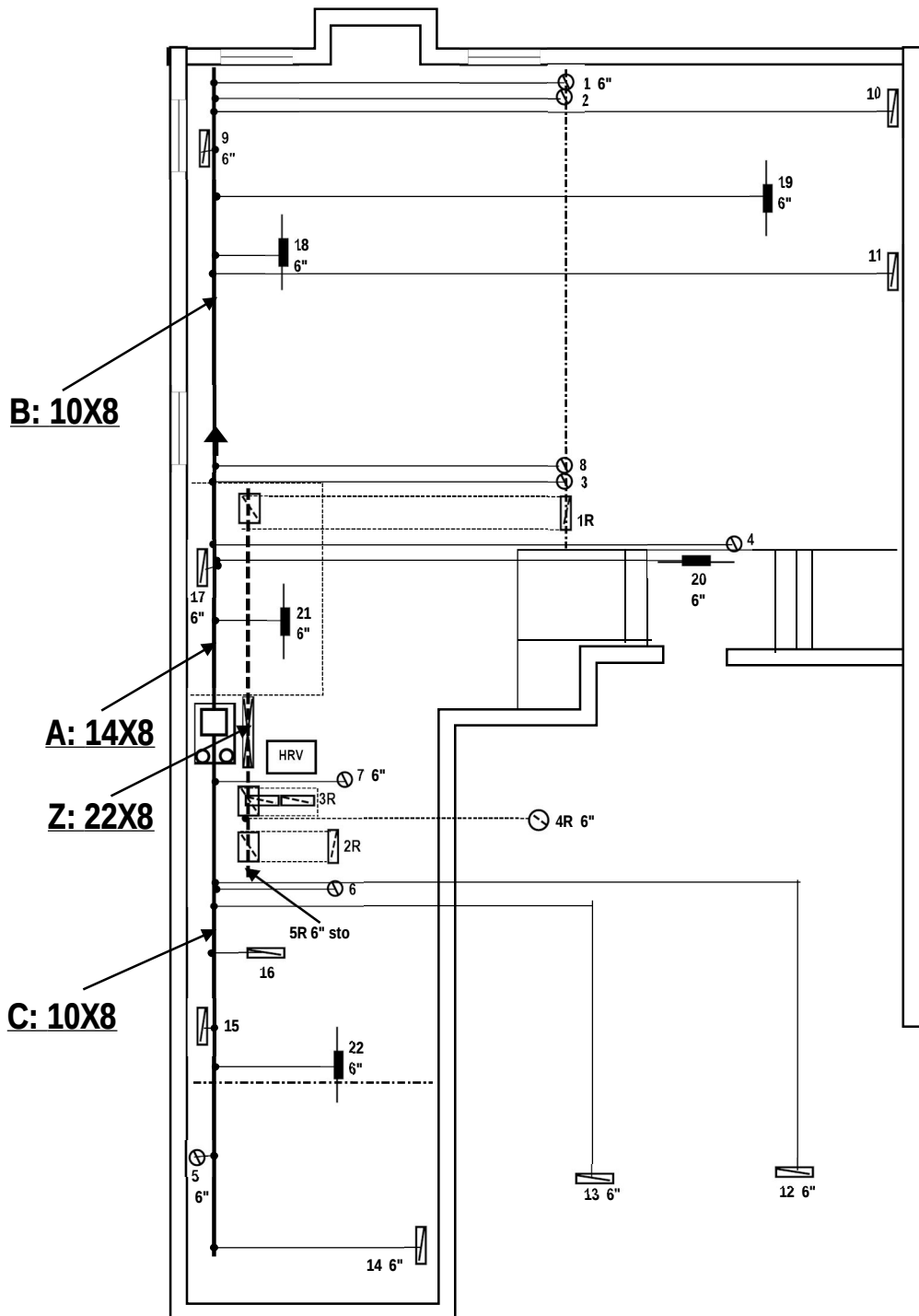


◀30' 10"▶



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: 47857 BTU
Heat Gain: 24687 BTU

2770 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	3	
1st Floor	9	2	
Basement	5	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 **3703 Edward**

Floor **Basement**

Scale **3/16"=1'0"**

Date **Mar-18**

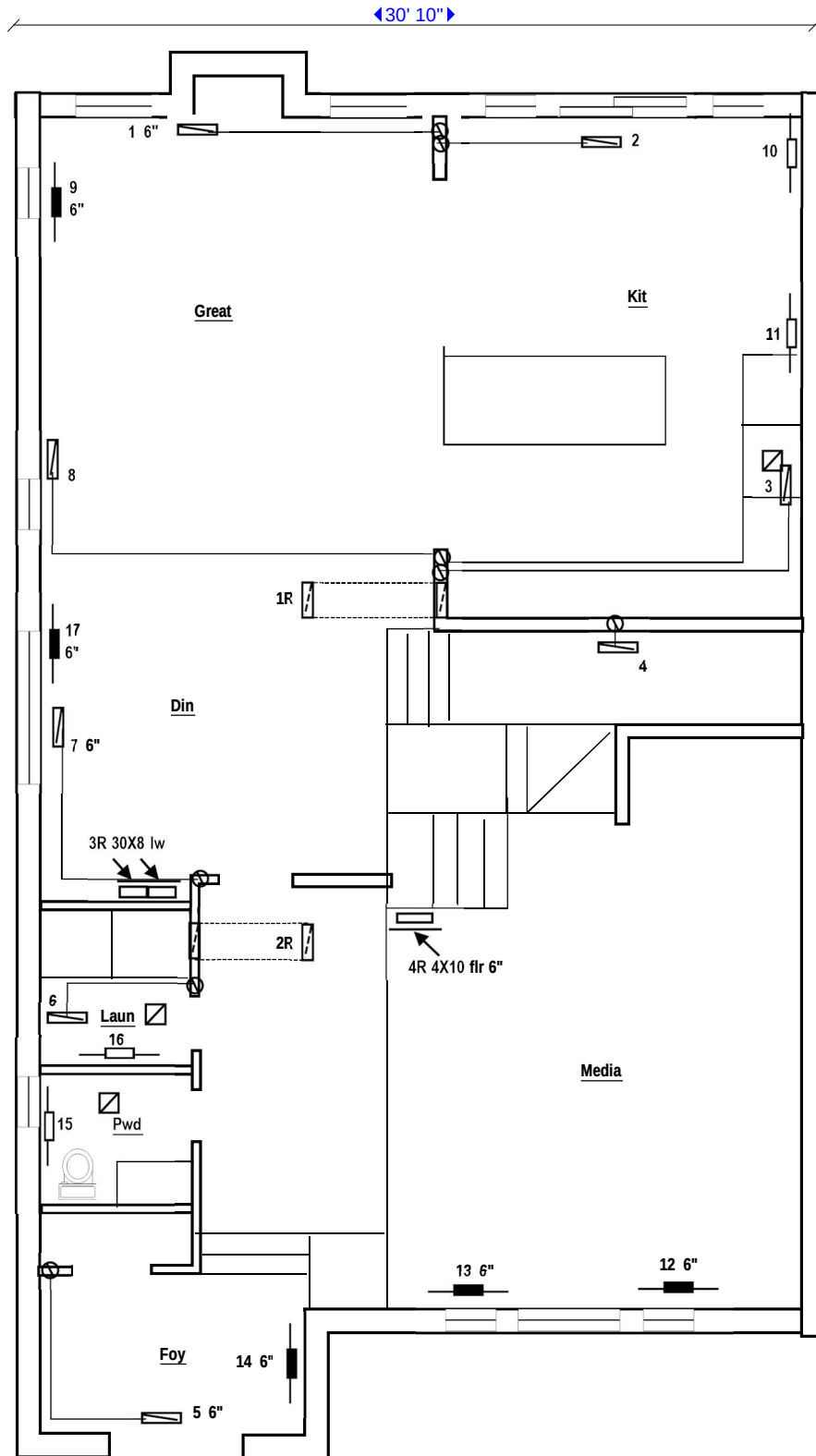
Revised

NewRes
HVAC Design

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

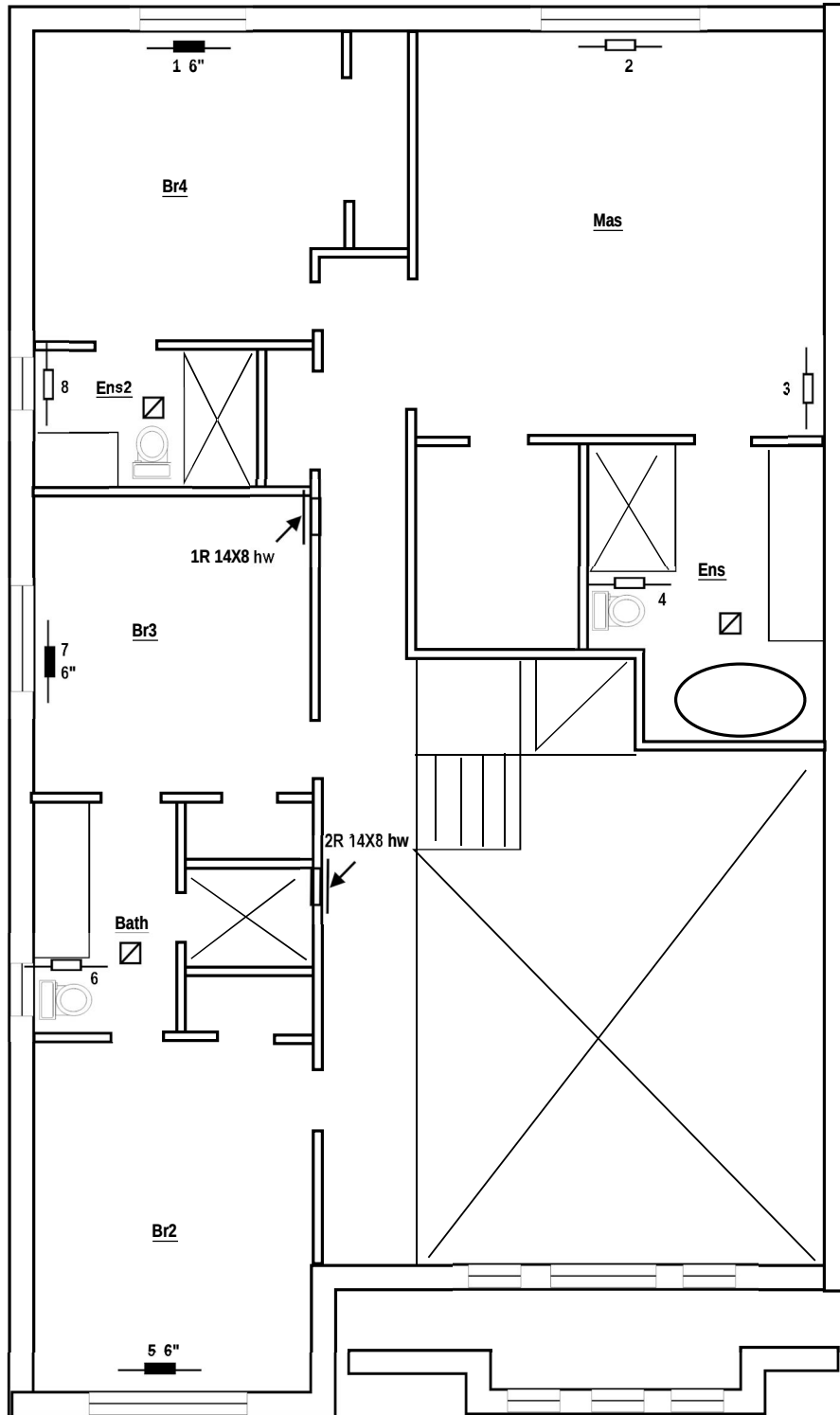
Client **Esquire**

LO# **9181**



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. <u>Alexis Dearie-Vonk</u> Alexis Dearie-Vonk 27098 3986 BCIN HRAI	Type	3703 Edward	NewRes HVAC Design 9 Hurontario st Orangeville On L9W 1Y8 Phone (416) 320-5870			
Input		BTU	Output		Floor	First				
Cooling		Tons	Fan		Scale	3/16"=1'0"				
No. of Runs	S/A		R/A		Cfm		Date	Mar-18	Client	Esquire
2nd Floor							Revised		LO#	9181
1st Floor										
Basement										

30' 10"



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	3703 Edward	NewRes HVAC Design 9 Hurontario st Orangeville On L9W 1Y8 Phone (416) 320-5870
Input		BTU	Output		Floor	Second	
Cooling		Tons	Fan		Scale	3/16"=1'0"	
No. of Runs		S/A	R/A		Date	Mar-18	Client
2nd Floor					Revised		Esquire
1st Floor							LO#
Basement							9181

MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL

Housetype 3703 Edward

File # 9181

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	5	10.6 cfm	53
Room Count cfm			180.2

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

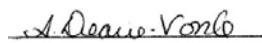
Housetype	
☒	I - Type a or b appliances only, no solid fuel
☐	II - Type I with solid fuel (including fireplace)
☐	III - Type C appliance
☐	IV - Type I or II with electric space heat
☐	Other - Type I,II,or IV no forced air

Supplemental Ventilation Capacity	
TVC room or air change (which larger)	180
Less Principal Exhaust Capacity (HRV)	80
Required Supp.Vent Capacity CFM	100

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 3703 Edward
File # 9181
Date Mar-18
Township Ajax

	Eff	Br4		Mas		Ens		Br2		Bath		Br3		Ens2		Great		Kit		Media		Foy		Pwd		Laun		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	
Width	17.0	13		16		16		11		11		11		11		16		14		16		12		12		12		14													39	
Length		11		16		11		14		8		12		5		18		20		23		8		5		6		13												39		
Area		143		256		176		154		88		132		55		288		280		368		96		60		72		182												1521		
Height		8		8		8		10		8		8		8		9		9		11		10		9		9		9												8		
LinFtWall		24		32		11		28		8		12		5		36		34		39		24		5		6		13												166		
Gr.Wall		192		256		88		280		64		96		40		324		306		429		240		45		54		117														
Net Wall		176	785	232	1035	88	393	240	1071	56	250	80	357	32	143	274	1223	240	1071	381	1700	212	946	37	165	54	241	81	361													
Windows																																										
E,W	16	341	24	511			40	852							26	554	66	1405	48	1022	28	596																	6	128		
S									8	170	16	341	8	170	24	511							8	170			36	766											6	128		
N																																										
Skylight	3.57																																									
Door	4																					32	608																21	399		
Ceiling	59.2	143	184	256	329	176	226	154	198	88	113	132	169	55	71				368	472																						
Cold Flr	29.8																		368	939																						
Header	17.0															36	148	34	140			24	99	5	21	6	25	13	53										166	682		
HL bgcr																																									4576	
SlabHLbgcr																																										
People/App		1		1				1				1				1		3		1					2																	
HL agcr			1310		1875		619		2120		533		867		384		2435		2616		4133		2249		356		266		1181													
HL airr		2	622	2	891	2	294	2	1008	2	253	2	412	2	182	1	1011	1	1086	1	1715	1	1069	1	148	1	110	1	490												9156	
HL dr																			368	585																						
Tot.Rm.Loss BTU		1932		2766		913		3128		787		1279		566		3446		3702		6433		3317		504		376		1672												15068		

HL airb= 36474 X 0.018 X 76 X 0.3670 5367 W 18312 BTU
BasementHLR 1341 W X 3.41 4576 BTU

HLairr Multipliers

2nd BTU (0.2)	7707	0.48
1st BTU (0.3)	13235	0.42
Bsmt BTU (0.5)	5912	1.55

Total Structure Heat Loss 45887
Mech.Vent Loss 1970
TOTAL HEAT LOSS BTU 47857

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 3703 Edward
File # 9181
Date Mar-18
Township Ajax

		Br4		Mas		Ens		Br2		Bath		Br3		Ens2		Great		Kit		Media		Foy		Pwd		Laun		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	13		16		16		11		11		11		11		16		14		16		12		12		12		14												39	
Length		11		16		11		14		8		12		5		18		20		23		8		5		6		13											39		
Area		143		256		176		154		88		132		55		288		280		368		96		60		72		182											1521		
Height		8		8		8		10		8		8		8		9		9		11		10		9		9		9											8		
LinFtWall		24		32		11		28		8		12		5		36		34		39		24		5		6		13											166		
Gr.Wall		192		256		88		280		64		96		40		324		306		429		240		45		54		117													
Net Wall		176	41	232	54	88	21	240	56	56	13	80	19	32	8	274	64	240	56	381	89	212	50	37	9	54	13	81	19												
Windows																																									
E,W		27	16	437	24	656		40	1093							26	711	66	1804	48	1312	28	765																6	164	
S		18								8	145	16	291	8	145	24	436							8	145			36	654										6	109	
N		11																																							
Skylight	49																																								
Door	4																				32	32															21	21			
Ceiling	59.22	143	186	256	333	176	229	154	200	88	114	132	172	55	72					368	478																				
Cold Flr	29.8																			368	-12																				
Header	17.03															36	8	34	7			24	5	5	1	6	1	13	3								166	36			
HG svr			56		88		21		114		23		41		19		103		158		158		72		13		1		57										28		
HG dr																				1247																					
Total Cond			665		1043		250		1350		273		481		224		1219		1868		1868		852		155		14		676										330		
Air Leak.			37		58		14		74		15		27		12		67		103		103		47		9		1		37										18		
Peop/App		1	240	1	240			1	240			1	240			1	1000	3	1700	1	800					2	600														
HG sr		997		1429		284		1778		311		788		256		2389		3671		4175		971		177		616		770											376		

HG salb= 36473.5 X 0.018 X 11 X 0.086 182 W 621 BTU

Mech. Vent Gain 950 BTU HG cb 11268 BTU

All Calculations based on CAN/CSAF280 and HRAI Digest Standards

Total Structure Heat Gain 18990

Latent Load Multiplier 1.3

Total Heat Gain BTU 24687

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 3703 Edward
File # 9181
Date Mar-18
Township Ajax

Trunk	C									B							A															
Outlet #	14	5	22	15	16	13	6	12	7	1	2	10	9	19	18	11	8	3	4	20	17	21										
Outlet Loc	Foy	Br2	Bsmt	Pwd	Laun	Media	Bath	Media	Br3	Br4	Mas	Kit	Great	Bsmt	Bsmt	Kit	Ens2	Mas	Ens	Bsmt	Din	Bsmt										
BTU/RM	3317	3128	15068	504	376	6433	787	6433	1279	1932	2766	3702	3446	15068	15068	3702	566	2766	913	15068	1672	15068										
# Out/Rm	1	1	5	1	1	2	1	2	1	1	2	2	1	5	5	2	1	2	1	5	1	5										
CFM/Outlet	57	54	52	9	6	55	13	55	22	33	24	32	59	52	52	32	10	24	16	52	29	52										
Act&Eff Len	145	160	175	170	180	190	200	205	210	155	170	180	185	190	195	200	145	160	170	180	190	195										
Adj.Press	0.09	0.08	0.07	0.08	0.07	0.07	0.07	0.06	0.06	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.09	0.08	0.08	0.07	0.07	0.07										
Pipe Size	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5										
Tr.Fl.Rate									322							282						463										
TrunkWidth									10							10						14										
Tr.Height									8							8						8										
Velocity									580							508						595										

Trunk	Z									
Inlet #	1R	5R	2R	4R	3R					
CFM	140	90	140	90	325					
Inlet Size	14X8	6"	14X8	6"	30X8					
Act&Eff Len	235	205	185	170	150					
Adj.Press.	0.05	0.05	0.06	0.06	0.07					
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		Project #
and may not be used by any other person without authorization. Documents for permit and/or construction are signed in red							
Building Location							
Model:	3703 Edward				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: 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 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						

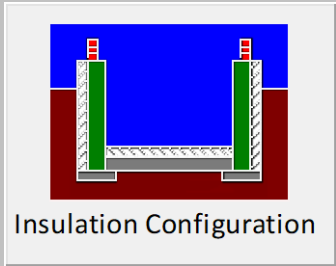
Envelope Air Leakage Calculator

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):	8.7			
Building Configuration				
Type:	Detached ▼			
Number of Stories:	Two ▼			
Foundation:	Full ▼			
House Volume (m ³):	1032			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (ACH=3.57) ▼			
Custom BDT Data:	ELA @ 10 Pa. ▼ 1305.5 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):		0.367		
Cooling Air Leakage Rate (ACH/H):		0.086		

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):	14.6	
Exposed Perimeter (m):	48	
Wall Height (m):	2.5	
Depth Below Grade (m):	1.9	
Window Area (m ²):	1.9	
Door Area (m ²):	1.1	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1341