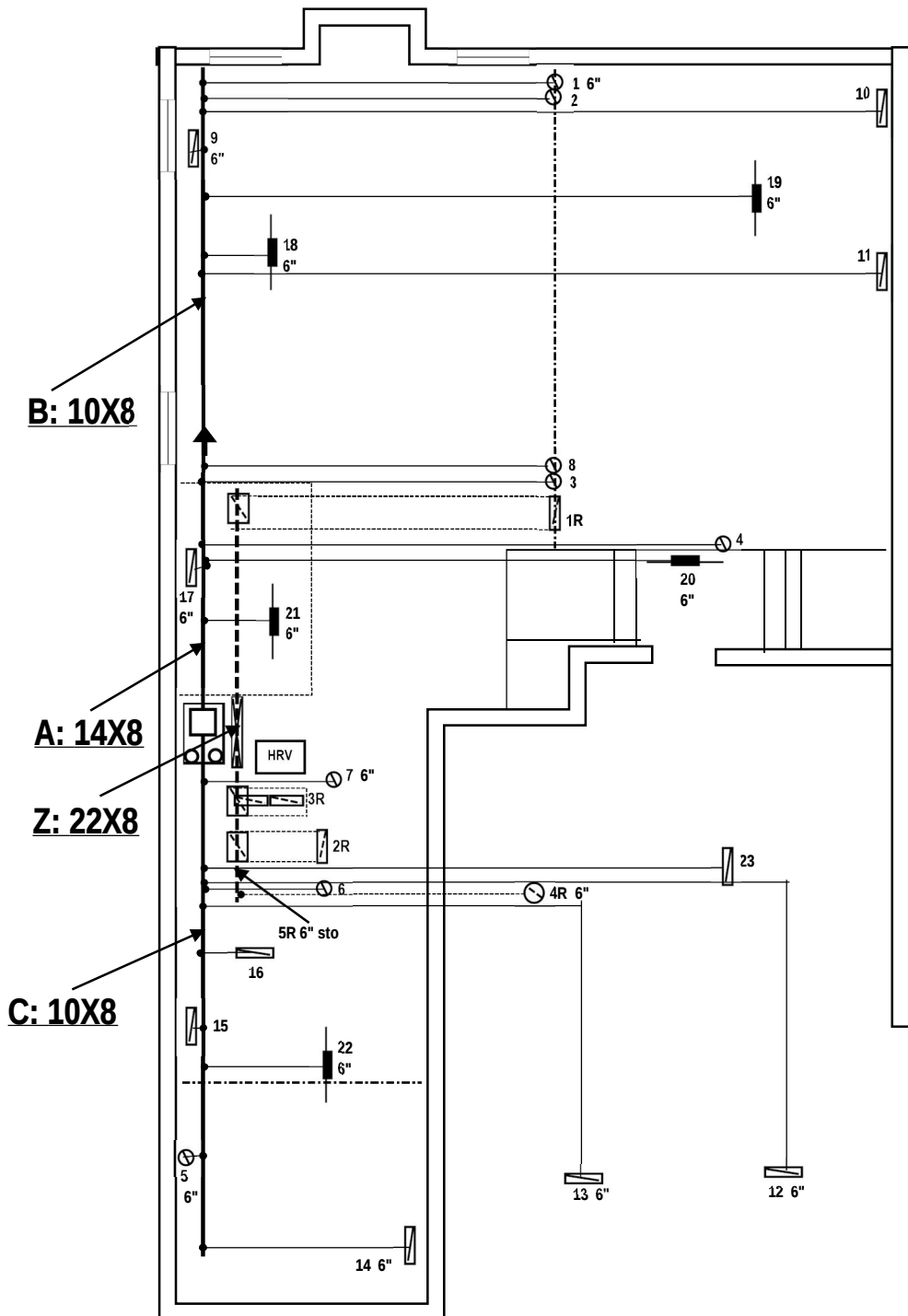


◀30' 10"▶



Notes:

- Furnace to have ECM motor
- Hot Water Tank Minimum 0.8EF
- Heat and Cool loads calculated using CAN/CSAF280
- 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: 47615 BTU
Heat Gain: 24761 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	11	3	
1st Floor	10	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 Opt

Floor Basement

Scale 3/16"=1'0"

Date Mar-18

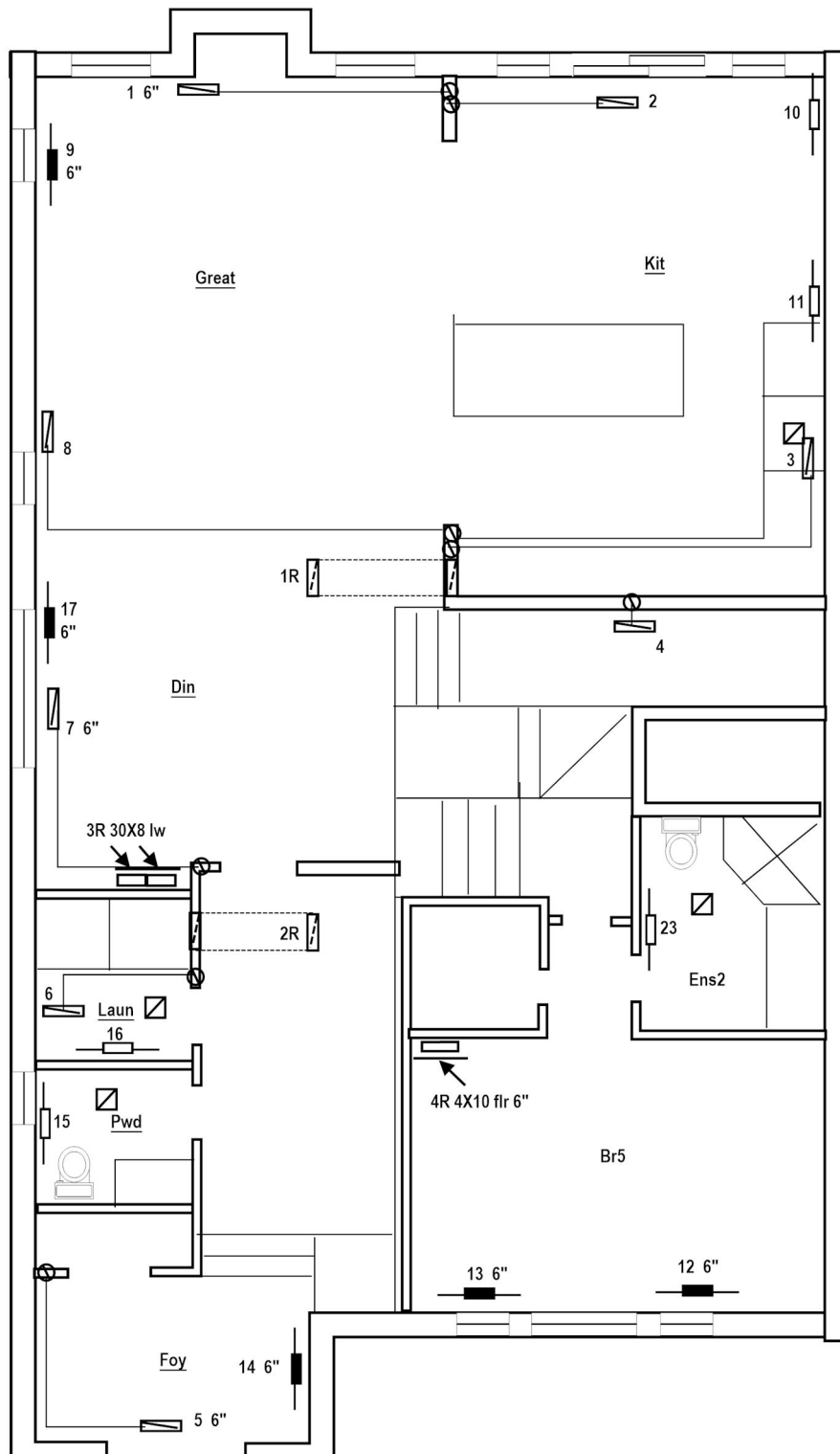
Revised

NewRes
HVAC Design

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

Client Esquire

LO# 9182



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 3703 Edward 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		Client Esquire
2nd Floor						LO# 9182	
1st Floor							
Basement							

This floor plan illustrates a two-story residence with the following layout and features:

- Rooms and Dimensions:**
 - Br4:** Located in the top left, measuring 16' 6" wide by 8' 6" deep.
 - Br3:** Located in the middle left, measuring 14' 8" wide by 7' 6" deep.
 - Br2:** Located in the bottom left, measuring 14' 8" wide by 5' 6" deep.
 - Mas:** Master bedroom located in the top right.
 - Ens:** Two en-suite bedrooms, one in the middle right and one in the bottom right.
 - Bath:** A bathroom located in the bottom left.
- Architectural Details:**
 - Stairs:** A central staircase labeled "2R 14X8 hw" (2nd floor, 14' x 8" hardwood) with an arrow pointing to the stairs.
 - Doors:** Various door types are indicated by symbols: a solid rectangle for a standard door, a rectangle with a diagonal line for a sliding door, and a rectangle with a cross for a closet door.
 - Windows:** Indicated by small rectangles with dots, labeled with numbers 1 through 8.
 - Furniture:** Includes a bed in the Mas, a bathtub in the Bath, and a toilet in the Ens (bottom right).

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.		Type	3703 Edward Opt		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		 Alexis Dearie-Vonk 27098 3986 BCIN HRAI	Date	Mar-18		Client	Esquire
2nd Floor					Revised			LO#	9182
1st Floor									
Basement									

MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL

Housetype 3703 Edward Opt

File # 9182

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	6	10.6 cfm	63.6
Other Rooms	4	10.6 cfm	42.4
Room Count cfm			190.8

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

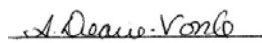
Housetype	
☒	I - Type a or b appliances only, no solid fuel
☐	II - Type I with solid fuel (including fireplace)
☐	III - Type C appliance
☐	IV - Type I or II with electric space heat
☐	Other - Type I,II,or IV no forced air

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

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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 Opt
File # 9182
Date Mar-18
Township Ajax

	Eff	Br4		Mas		Ens		Br2		Bath		Br3		Ens2		Great		Kit		Br5		Foy		Pwd		Laun		Din		Ens3												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	13		16		16		11		11		11		11		16		14		16		12		12		12		14		16												39	
Length		11		16		11		14		8		12		5		18		20		11		8		5		6		13		10											39		
Area		143		256		176		154		88		132		55		288		280		176		96		60		72		182		160											1521		
Height		8		8		8		10		8		8		8		9		9		11		10		9		9		9		8											8		
LinFtWall		24		32		11		28		8		12		5		36		34		27		24		5		6		13		10											166		
Gr.Wall		192		256		88		280		64		96		40		324		306		297		240		45		54		117		80													
Net Wall		176	785	232	1035	88	393	240	1071	56	250	80	357	32	143	274	1223	240	1071	249	1111	212	946	37	165	54	241	81	361	80	357												
Windows	3.57																																										
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																																											
Door		4																					32	608																	21	399	
Ceiling		59.2	143	184	256	329	176	226	154	198	88	113	132	169	55	71					176	226								160	205												
Cold Flr	29.8																			176	449									100	255												
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		2808		2249		356		266		1181		817												
HL airr		2	622	2	891	2	294	2	1008	2	253	2	412	2	182	1	1051	1	1129	1	1212	1	1069	1	154	1	115	1	510	1	353											9156	
HL dr																				176	402								100	117													
Tot.Rm.Loss BTU		1932		2766		913		3128		787		1279		566		3486		3745		4422		3317		510		380		1691		1287										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)	12728	0.43
Bsmt BTU (0.5)	5912	1.55

All Calculations based on CAN/CSAF280 and HRAI Digest Standards

Total Structure Heat Loss 45275
Mech.Vent Loss 2339
TOTAL HEAT LOSS BTU 47615

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 Opt
File # 9182
Date Mar-18
Township Ajax

	Fac	Br4		Mas		Ens		Br2		Bath		Br3		Ens2		Great		Kit		Br5		Foy		Pwd		Laun		Din		Ens3										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	13		16		16		11		11		11		11		16		14		16		12		12		12		14		16											39		
Length		11		16		11		14		8		12		5		18		20		11		8		5		6		13		10										39			
Area		143		256		176		154		88		132		55		288		280		176		96		60		72		182		160											1521		
Height		8		8		8		10		8		8		8		9		9		11		10		9		9		9		8											8		
LinFtWall		24		32		11		28		8		12		5		36		34		27		24		5		6		13		10											166		
Gr.Wall		192		256		88		280		64		96		40		324		306		297		240		45		54		117		80													
Net Wall		176	41	232	54	88	21	240	56	56	13	80	19	32	8	274	64	240	56	249	58	212	50	37	9	54	13	81	19	80	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					176	229								160	208													
Cold Flr	29.8																			176	-6								100	-3													
Header	17.03															36	8	34	7			24	5	5	1	6	1	13	3										166	36			
HG svr			67		105		25		136		27		48		23		123		188		160		86		16		1		68		22											33	
HG dr																					1208																						
Total Cond			665		1043		250		1350		273		481		224		1219		1868		1594		852		155		14		676		223											330	
Air Leak.			37		58		14		75		15		27		12		67		103		88		47		9		1		37		12											18	
Peop/App		1	240	1	240			1	240			1	240			1	1000	3	1700	1	800					2	600																
HG sr		1008		1446		288		1801		316		796		259		2409		3671		3850		985		179		616		782		258										381			

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

Mech. Vent Gain 1129 BTU HG cb 11218 BTU

All Calculations based on CAN/CSAF280 and HRAI Digest Standards

Total Structure Heat Gain 19047

Latent Load Multiplier 1.3

Total Heat Gain BTU 24761

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 Opt
File # 9182
Date Mar-18
Township Ajax

Trunk	C										B							A														
Outlet #	14	5	22	15	16	13	6	12	23	7	1	2	10	9	19	18	11	8	3	4	20	17	21									
Outlet Loc	Foy	Br2	Bsmt	Pwd	Laun	Br5	Bath	Br5	Ens3	Br3	Br4	Mas	Kit	Great	Bsmt	Bsmt	Kit	Ens2	Mas	Ens	Bsmt	Din	Bsmt									
BTU/RM	3317	3128	15068	510	380	4422	787	4422	1287	1279	1932	2766	3745	3486	15068	15068	3745	566	2766	913	15068	1691	15068									
# Out/Rm	1	1	5	1	1	2	1	2	1	1	1	2	2	1	5	5	2	1	2	1	5	1	5									
CFM/Outlet	58	54	52	9	7	38	14	38	22	22	33	24	32	60	52	52	32	10	24	16	52	29	52									
Act&Eff Len	145	160	175	170	180	190	200	205	210	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	0.06	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	6	5	5	5	5	5	5	5	5	5									
Tr.Fl.Rate										314							287						471									
TrunkWidth										10							10						14									
Tr.Height										8							8						8									
Velocity										566							517						605									

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 Opt 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: 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 (R 17.03 Actual)			Style A:	R20ci Nominal (R21.12 Actual)				
Style B:				Style B:					
Style C:				Style C:					
Style D:				Style D:					
Floors on Soil				Ceilings					
Style A:				Style A:	R60 Nominal (R59.22 Actual) (R27.65 Actual Ceiling with no attic)				
Style B:				Style B:					
Exposed Floors				Style C:					
Style A:	R31 Nominal (R29.8 Actual)			Doors					
Style B:				Style A:	Assumed Insulated				
Windows				Style B:					
Style A:	U 0.28 (R 3.57 Actual)			Style C:				Skylights	
Style B:				Style A:	U 0.49 (R 2.04 Actual)				
Style C:				Style B:					
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								

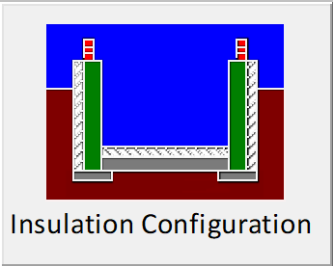
Envelope Air Leakage Calculator

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):	8.7			
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:		
	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):		0.367		
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