MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL

Housetype	T03 End & Mod

File #	6914

Builder	Esquire
Address	
City	
Phone	

Heat Loss Due to Mechanical Ventilation		
PVC X DTDh X 1.2 X (1-E)=	0	BTU
Heat Gain Due to Mechanical Ventilation		
PVC X DTDc X 1. 2 X (1-E)=	0	BTU

The Above is N/A if no HRV is installed

Combustion Appliances

- [x] 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	2	10.6 cfm	21.2
Bath & Kitchen	4	10.6 cfm	42.4
Other Rooms	2	10.6 cfm	21.2
		Room Count cfm	127.2
Air Change TVC= HouseVol.X0.3/60			92.6

Heating System

- [x] Forced Air
- [ ] Non Forced Air
- [ ] Electric Space Heat

Housetype

- [x] 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)		127
Less Principal Exhaust Capacity (HRV)		70
Required Supp.Vent Capacity	CFM	57

System Design Option

- [x] 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
- [x] Part 9 9.32.3.1

Supplemental Fans

Location	cfm	Model	Pipe
Ens	50	Broan ZB80M	4"
Pwd	50	Broan ZB80M	4"

all fans HVI listed

Principal Ventilation Fan

Model

Bathroom	Broan ZB80	6"	70cfm

Designer Certification

I have reviewed and take reponsibility 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 A. 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 22 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
A. Dearie-Vonk

Customer	Esquire
Housetype	T03 End & Mod
File #	6914
Date	May-15
Township	Ajax

	Eff	Ens		Mas		Bath		Br2		Br3		Great		Kit		Foy/Pwd		WIC																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
Width		5		14		14		10		10		19		19		10		5																		25	
Length		14		18		8		14		10		13		10		20		21																		26	
Area		70		252		112		140		100		247		190		200		105																		650	
Height		8		8		8		8		9		9		9		9		8																		8	
LinFtWall		19		14		1		10		24		32		20		50		21																		128	
Gr.Wall		152		112		8		80		216		288		180		450		168																			
Net Wall	**20.8**	130	**475**	86	**314**	8	**29**	62	**227**	182	**665**	198	**723**	156	**570**	414	**1513**	134	**490**																		
Windows																																					
E,W		14	**340**	26	**631**			18	**437**	24	**583**	66	**1603**			24	**583**																			3	**73**
S		8	**194**							10	**243**	24	**583**	24	**583**	12	**291**	34	**826**																			6	**146**
N																																					
Skylight	**3.13**																																				
Door	**4**															42	**798**																			21	**399**
Ceiling	**49.2**	70	**108**	252	**389**	112	**173**	140	**216**	100	**154**							205	**317**																		
Cold Flr	**27.7**							140	**384**	24	**66**																										
Header	**20.8**											32	**117**	20	**73**	50	**183**																				
HL bgcr																																					**3740**
SlabHLbgcr																																					
People/App				1				1		1		1		3																							
HL agcr			**1117**		**1335**		**202**		**1264**		**1711**		**3026**		**1226**		**3368**		**1632**																		
HL airr		2	**255**	2	**305**	2	**46**	2	**289**	2	**391**	1	**989**	1	**401**	1	**1101**	2	**373**																		**2393**
HL dr								140	**155**	20	**210**																										
Tot.Rm.Loss BTU		1373		1640		248		1708		2312		4015		1626		4468		2005																		6133	

HL airb= **524 / 3.6 X 42 X 1.2 X 0.19** **1410** **W X 3.41** **4810** **BTU**

BasementHLR **915** **W X 3.41** **3122** **BTU**

Total Structure Heat Loss	25529
Mech.Vent Loss	NA
TOTAL HEAT LOSS BTU	25529

Hlairr Multipliers

2nd BTU	**7261**	**0.13**
1st BTU	**7619**	**0.19**
Bsmt BTU	**3740**	**0.64**

All Calculations based on CAN/CSAF280 and HRAI Digest Standards

NEWRES HVAC DESIGN
9 Hurontario street
Orangeville Ont
L9W 1Y8
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Heat Gain Calculation

Heat loss ^T 76 f Heat Gain ^T 11 f Bsmt ^T 22 f

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

Customer	Esquire
Housetype	T03 End & Mod
File #	6914
Date	May-15
Township	Ajax

		Ens		Mas		Bath		Br2		Br3		Great		Kit		Foy/Pwd		WIC																		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		5		14		14		10		10		19		19		10		5																		25	
Length		14		18		8		14		10		13		10		20		21																		26	
Area		70		252		112		140		100		247		190		200		105																		650	
Height		8		8		8		8		9		9		9		9		8																		8	
LinFtWall		19		14		1		10		24		32		20		50		21																		128	
Gr.Wall		152		112		8		80		216		288		180		450		168																			
Net Wall	**20.8**	130	**88**	86	**58**	8	**5**	62	**42**	182	**123**	198	**133**	156	**105**	414	**279**	134	**90**																		
Windows																																					
E,W	**285**	14	**539**	26	**942**			18	**673**	24	**874**	66	**2285**			24	**874**																			3	**169**
S	**160**	8	**220**							10	**259**	24	**525**	24	**525**	12	**297**	34	**715**																			6	**89**
N	**93**																																				
Skylight	**534**																																				
Door	**4**															42	**147**																			21	**74**
Ceiling	**49.2**	70	**60**	252	**215**	112	**96**	140	**120**	100	**85**							205	**175**																		
Cold Flr	**27.7**							140	**45**	24	**8**																										
Header	**20.8**											32	**22**	20	**13**	50	**34**																			128	**86**
HG svr																																					
HG dr									**333**		**1**																										
Total Cond			**906**		**1215**		**101**		**880**		**1349**		**2965**		**643**		**1630**		**980**																			**417**
Air Leak.			**5**		**7**		**1**		**5**		**7**		**16**		**4**		**9**		**5**																			**2**
Peop/App				1	**240**			1	**240**	1	**240**	1	**240**	3	**1604**																						
HG sr		911		1461		102		1457		1597		3221		2251		1639		991																		420	

HG salb= **0.017** X **146** X **6 C** X **1.2** **18** W X **3.41** **61** BTU

Mech. Vent Gain BTU **HG cb** **11087** BTU

All Calculations based on CAN/CSAF280 and HRAI Digest Standards

Total Structure Heat Gain	14051
Latent Load Multiplier	1.3
Total Heat Gain BTU	18266

NEWRES HVAC DESIGN
9 Hurontario street
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L9W 1Y8
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Duct Calculation

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Alexis Dearie-Vonk BCIN# 27098 HRAI# 3986

Customer	Esquire
Housetype	T03 End & Mod
File #	6914
Date	May-15
Township	Ajax

Trunk	**B**							**A**																								
Outlet #	5	9	12	8	4	3	13	1	6	2	10	7	11																			
Outlet Loc	Br3	Foy/Pwd	Bsmt	Foy/Pwd	Br2	Bath	WIC	Ens	Great	Mas	Bsmt	Kit	Bsmt																			
BTU/RM	2312	4468	6133	4468	1708	248	2005	1373	4015	1640	6133	1626	6133																			
# Out/Rm	1	2	3	2	1	1	1	1	1	1	3	1	3																			
CFM/Outlet	52	50	46	50	38	6	45	31	90	37	46	37	46																			
Act&Eff Len	175	150	155	165	200	200	205	155	160	185	180	190	195																			
Adj.Press	0.07	0.09	0.08	0.08	0.07	0.07	0.06	0.08	0.08	0.07	0.07	0.07	0.07																			
Pipe Size	5	5	5	5	5	5	5	5	6	5	5	5	5																			
Tr.Fl.Rate							288						287																			
TrunkWidth							**10**						**10**																			
Tr.Height							**8**						**8**																			
Velocity							518						517																			

Trunk	Z									
Inlet #	3R	4R	1R	2R						
CFM	305	90	90	90						
Inlet Size	30X6	6"	6"	6"						
Act&Eff Len	190	150	175	155						
Adj.Press.	0.06	0.07	0.06	0.07						
Tr.Fl.Rate				575						
Tr.Width				**18**						
Tr.Height				**8**						
Velocity				575						

Equipment	
Manufacturer	**Bryant**
Furnace	**925SA040**
Output	**39000**
AirFlow	**575**
AC Size	**1.5**

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:	T03 End & Mod Tall Grass	Site:	River Run
Address:		Lot:	
City:	Ajax	Postal Code:	

Calculations Based On

Dimensional Info. Based on: Hunt Designs

Attachment:	Semi-Detached		Front Face:	East	Assumed? Yes
# of Stories:	2+Bsmt		Air Tight:	Very Tight	Assumed? Yes
Weath Loc:	Ajax	Ventilated? Inc	Wind Exp:	Part-Shelter	
HRV?	NO		Int.Shade:	Yes	Occupants: 4
Recovery %			Unit:	Imperial	

Heating Design Conditions

Out Temp: -20 Ind.Temp: 22 Soil Temp: 10

Cooling Design Conditions

Out Temp: 30 Ind.Temp: 24 Lat: 43.85 ST ran: 10

Above Grade Walls

Style A:	2X6 @16"OC R24 Brick or Siding
Style B:	
Style C:	
Style D:	

Below Grade Walls

Style A:	R20 Full Height Insulation
Style B:	
Style C:	
Style D:	

Floors on Soil

Style A:	No Bsmt Insul below frost line
Style B:	

Ceilings

Style A:	R50 Batt Insulation
Style B:	
Style C:	

Exposed Floors

Style A:	R31-Garage Ceil
Style B:	

Doors

Style A:	R4 Insulated
Style B:	
Style C:	

Windows

Style A:	Assumed Dbl Low E Argon operable R3.13
Style B:	
Style C:	
Style D:	

Skylights

Style A:	
Style B:	

Att.Docs:	
Notes:	

Calculations Performed By

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

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

A. Dearie-Vonk

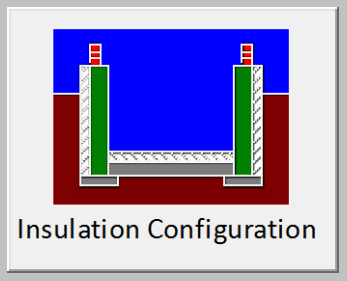
Envelope Air Leakage Calculator

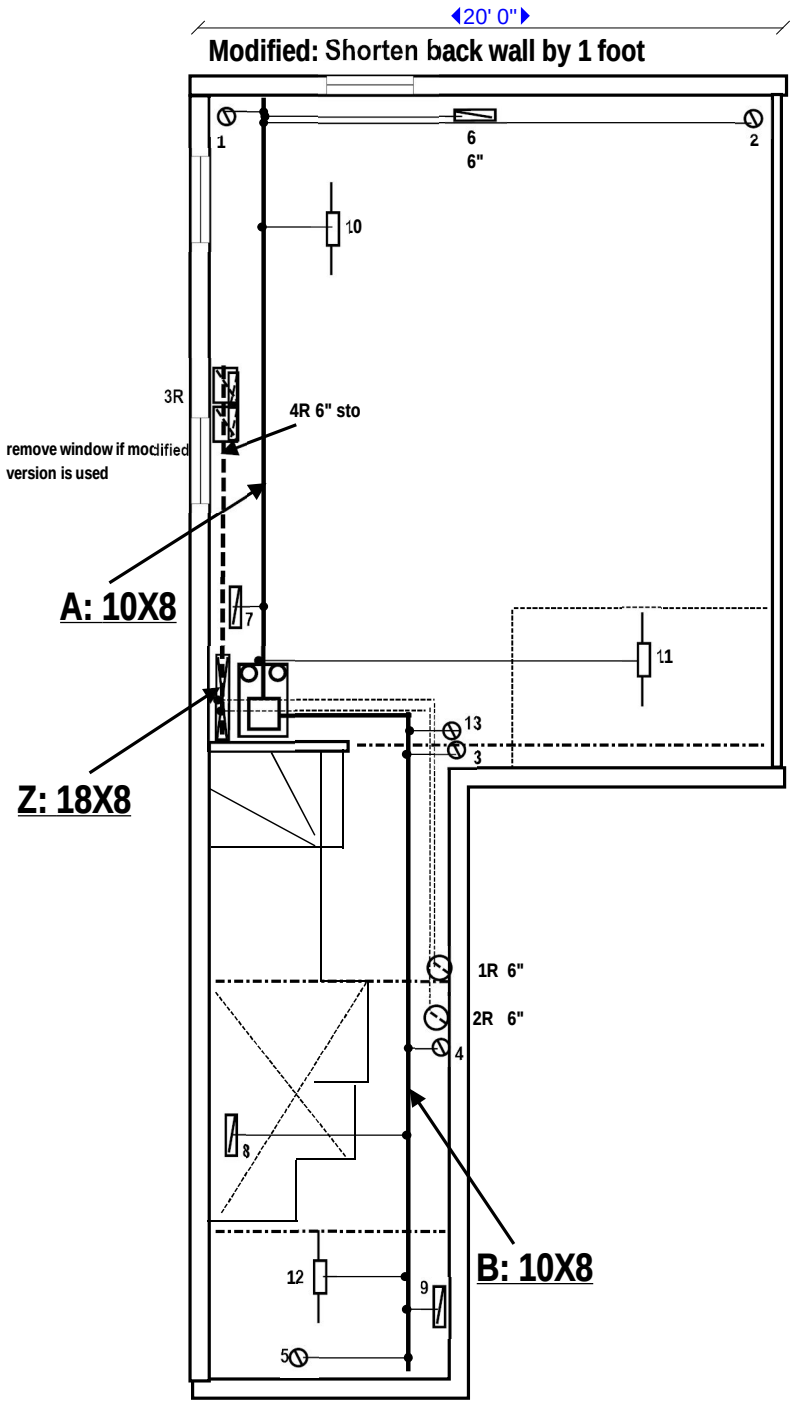
Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Ajax			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban forest			
Walls:	Very heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.3			
Building Configuration				
Type:	Semi-Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m^3):	524			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (ACH=3.57)			
Custom BDT Data:	ELA @ 10 Pa.	662.91 cm^2		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	**Total Supply:**	**Total Exhaust:**		
	80	60		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Envelope Air Leakage Rate				
Heating Air Leakage Rate (ACH/H):	**0.192**			
Cooling Air Leakage Rate (ACH/H):	**0.017**			

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):	**14**	 Insulation Configuration
Floor Width (m):	**5.7**	
Exposed Perimeter (m):	**31**	
Wall Height (m):	**2.5**	
Depth Below Grade (m):	**1.9**	
Window Area (m^2):	**0.83**	
Door Area (m^2):	**1.9**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):	**915**	



Notes:
- -Furnace to have ECM motor
- -Hot Water Tank Minimum 0.67 EF
- -Heat and Cool loads calculated using CAN/CSA F280

1509 SF

Package D

	Nom	Act		Nom	Act
Ceil.w Attic	R50	R49.2	Bsmt wall	R20	R20
Ceil.w/o Attic	R31	R27.7	Windows		R3.13
Exp.Floor	R31	R27.7	Skylights		U2.8
Walls	R24	R20.8	Furn Eff		94%
ECM Motor	Yes		HRV Eff		NA

Heat Loss: 25529 BTU
Heat Gain: 18266 BTU

River Run Ajax

(Or Equivalent Furnace)

All runs 5" unless otherwise specified

UNIT DATA

Make	Bryant	Model	925SA040
Input	40000 BTU	Output	39000 BTU
Cooling	1.5 Tons	Fan	575 Cfm

No. of Runs	S/A	R/A
2nd Floor	6	2
1st Floor	4	1
Basement	3	1

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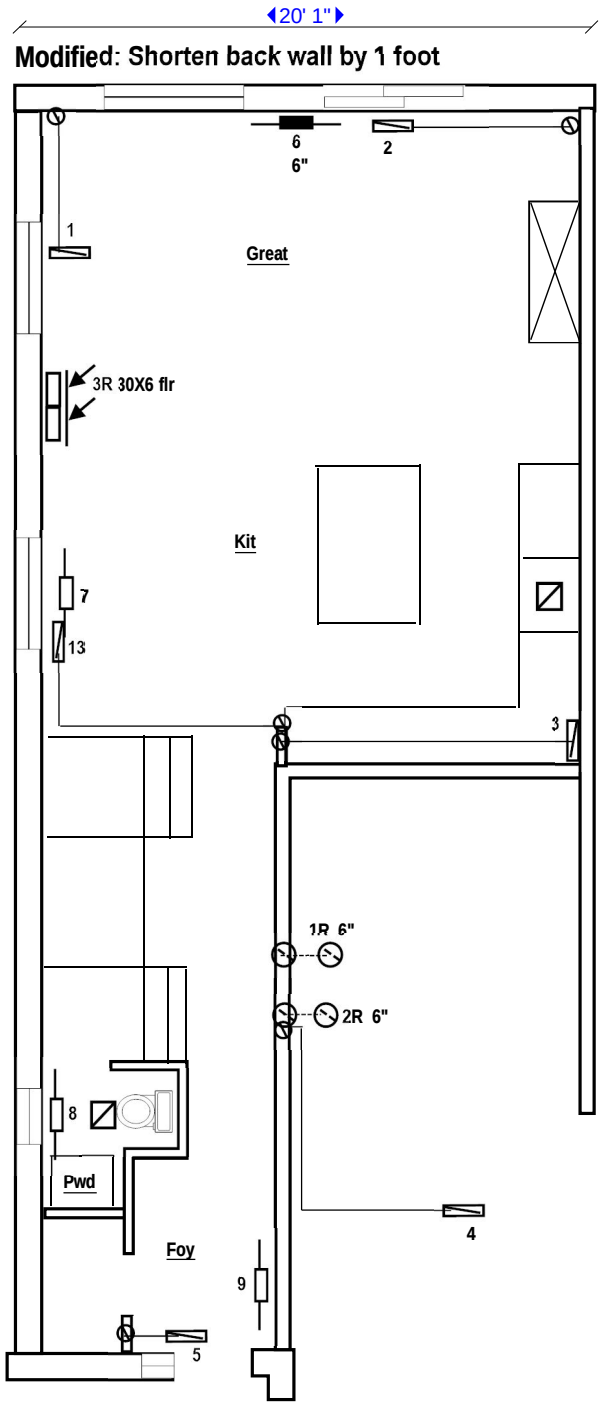
A Dearie-Vonk

Alexis Dearie-Vonk 27098 BCIN 3986 HRAI

Type	T03 End & Mod Tall Grass
Floor	Basement
Scale	3/16"=1'0"
Date	May-15
Revised	

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

Client	Esquire
LO#	6914



River Run Ajax

UNIT DATA			
Make		Model	
Input	BTU	Output	BTU
Cooling	Tons	Fan	Cfm
No. of Runs	S/A	R/A	
2nd Floor			
1st Floor			
Basement			

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.

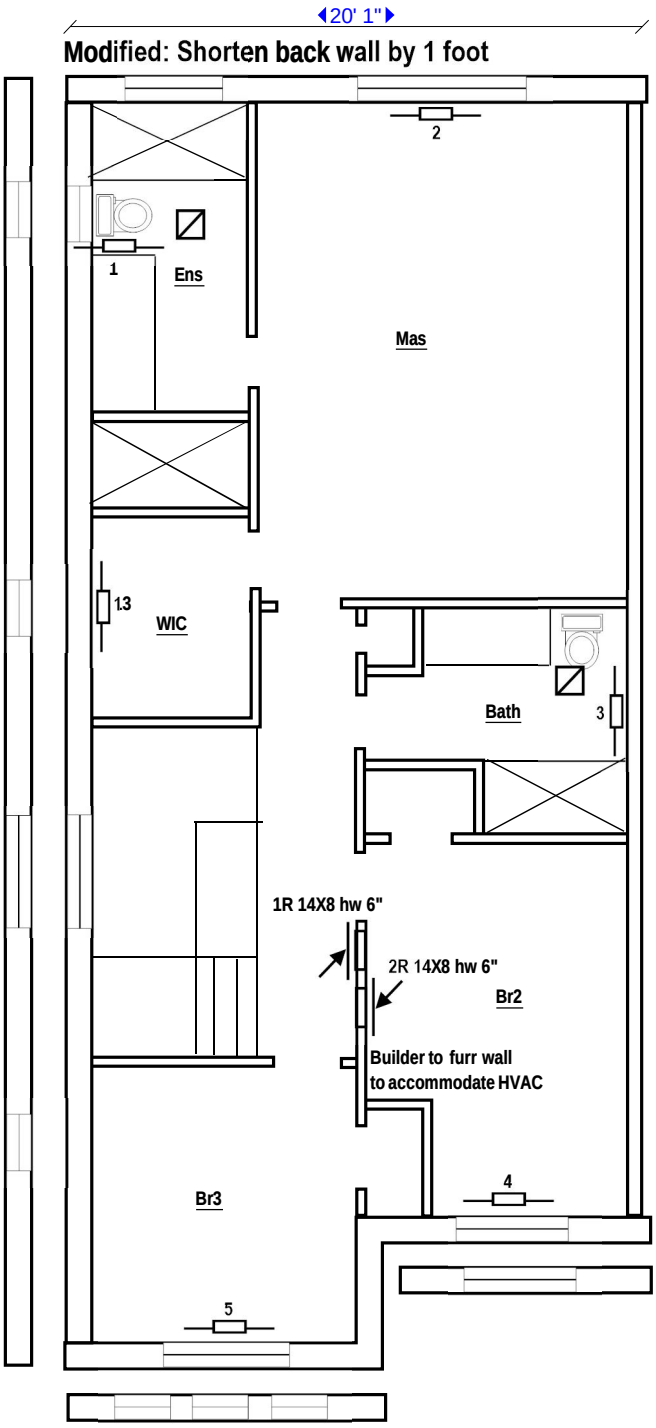
A Dearie-Vonk

Alexis Dearie-Vonk 27098 BCIN 3986 HRAI

Type	T03 End & Mod Tall Grass
Floor	First
Scale	3/16"=1'0"
Date	May-15
Revised	

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

Client	Esquire
LO#	6914



River Run Ajax

UNIT DATA					
Make		Model			
Input	BTU	Output	BTU		
Cooling	Tons	Fan	Cfm		
No. of Runs	S/A	R/A			
2nd Floor					
1st Floor					
Basement					

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.

A Dearie-Vonk

Alexis Dearie-Vonk 27098 3986
BCIN HRAI

Type	T03 End&Mod Tall Grass
Floor	Second
Scale	3/16"=1'0"
Date	May-15
Revised	

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

Client	Esquire
LO#	6914