MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL

Housetype	T04 Dogwood

File #	6916

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	3	10.6 cfm	31.8
Bath & Kitchen	4	10.6 cfm	42.4
Other Rooms	3	10.6 cfm	31.8
		Room Count cfm	148.4
Air Change TVC= HouseVol.X0.3/60			102.1

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)		148
Less Principal Exhaust Capacity (Bath)		70
Required Supp.Vent Capacity	CFM	78

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

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

Customer	Esquire
Housetype	T04 Dogwood
File #	6916
Date	May-15
Township	Ajax

	Eff	Mas		Br2		Bath		Br4/Fam		Br3		Ens		Liv		Kit		Foy		Pwd		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																	
Width		11		9		10		10		9		9		10		9		9		9		10																27	
Length		16		14		16		14		10		15		16		26		7		7		13																27	
Area		176		126		160		140		90		135		160		234		63		63		130																729	
Height		8		8		8		8		8		8		9		9		9		9		9																8	
LinFtWall		27		9		1		15		19		15		26		18		23		14		13																121	
Gr.Wall		216		72		8		120		152		120		234		162		207		126		117																	
Net Wall	**20.8**	180	**658**	54	**197**	8	**29**	78	**285**	113	**413**	98	**358**	208	**760**	116	**424**	183	**669**	114	**417**	79	**289**																
Windows																																							
E,W		18	**437**	18	**437**			42	**1020**	30	**728**			26	**631**	46	**1117**	24	**583**																			4	**97**
S		18	**437**							9	**219**	22	**534**							12	**291**	38	**923**															8	**194**
N																																							
Skylight	**3.13**																																						
Door	**4**																	42	**798**																			21	**399**
Ceiling	**49.2**	176	**272**	126	**195**	160	**247**	140	**216**	90	**139**	135	**209**																										
Cold Flr	**27.7**							140	**384**	30	**82**																												
Header	**20.8**													26	**95**	18	**66**	23	**84**	14	**51**	13	**48**																
HL bgcr																																							**3744**
SlabHLbgcr																																							
People/App		1		1				1		1				1		3																							
HL agcr			**1804**		**829**		**276**		**1905**		**1581**		**1101**		**1486**		**1607**		**2133**		**759**		**1259**																	
HL airr		2	**356**	2	**164**	2	**55**	2	**376**	2	**312**	2	**217**	1	**455**	1	**492**	1	**653**	1	**232**	1	**385**																**2770**
HL dr								140	**228**	30	**189**																												
Tot.Rm.Loss BTU		2160		993		331		2509		2082		1318		1941		2098		2787		992		1644																6514	

HL airb= **578 / 3.6 X 42 X 1.2 X 0.20** **1644** **W X 3.41** **5609** **BTU**

BasementHLR **895** **W X 3.41** **3054** **BTU**

Total Structure Heat Loss	25369
Mech.Vent Loss	NA
TOTAL HEAT LOSS BTU	25369

Hlairr Multipliers

2nd BTU	**7496**	**0.15**
1st BTU	**7244**	**0.23**
Bsmt BTU	**3744**	**0.74**

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 ^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	T04 Dogwood
File #	6916
Date	May-15
Township	Ajax

		Mas		Br2		Bath		Br4/Fam		Br3		Ens		Liv		Kit		Foy		Pwd		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
Width		11		9		10		10		9		9		10		9		9		9		10																27	
Length		16		14		16		14		10		15		16		26		7		7		13																27	
Area		176		126		160		140		90		135		160		234		63		63		130																729	
Height		8		8		8		8		8		8		9		9		9		9		9																8	
LinFtWall		27		9		1		15		19		15		26		18		23		14		13																121	
Gr.Wall		216		72		8		120		152		120		234		162		207		126		117																	
Net Wall	**20.8**	180	**121**	54	**36**	8	**5**	78	**53**	113	**76**	98	**66**	208	**140**	116	**78**	183	**123**	114	**77**	79	**53**																
Windows																																							
E,W	**285**	18	**673**	18	**673**			42	**1479**	30	**1076**			26	**942**	46	**1614**	24	**874**																			4	**203**
S	**160**	18	**411**							9	**239**	22	**487**							12	**297**	38	**791**															8	**89**
N	**93**																																						
Skylight	**534**																																						
Door	**4**																	42	**147**																			21	**74**
Ceiling	**49.2**	176	**150**	126	**108**	160	**137**	140	**120**	90	**77**	135	**115**																										
Cold Flr	**27.7**							140	**45**	30	**10**																												
Header	**20.8**													26	**18**	18	**12**	23	**15**	14	**9**	13	**9**															121	**81**
HG svr																																							
HG dr									**420**																														
Total Cond			**1355**		**817**		**142**		**1697**		**1478**		**668**		**1099**		**1704**		**1160**		**383**		**853**																	**446**
Air Leak.			**9**		**5**		**1**		**11**		**9**		**4**		**7**		**11**		**7**		**2**		**5**																	**3**
Peop/App		1	**240**	1	**240**			1	**240**	1	**240**			1	**240**	3	**1604**																						
HG sr		1604		1062		143		2368		1728		672		1346		3319		1175		385		859																449	

HG salb= **0.019** X **161** X **6 C** X **1.2** **22** W X **3.41** **75** BTU

Mech. Vent Gain [ ] BTU [ ] **HG cb** **11802** BTU

All Calculations based on CAN/CSAF280 and HRAI Digest Standards

Total Structure Heat Gain	15108
Latent Load Multiplier	1.3
Total Heat Gain BTU	19641

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Duct Calculation

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Alexis Dearie-Vonk BCIN# 27098 HRAI# 3986

Customer	Esquire
Housetype	T04 Dogwood
File #	6916
Date	May-15
Township	Ajax

Trunk	C						B					A																				
Outlet #	5	9	14	4	10	6	1	2	8	7	12	13	3	11																		
Outlet Loc	Br3	Foy	Bsmt	Br4/Fam	Pwd	Ens	Mas	Br2	Kit	Liv	Bsmt	Bsmt	Bath	Din																		
BTU/RM	2082	2787	6514	2509	992	1318	2160	993	2098	1941	6514	6514	331	1644																		
# Out/Rm	1	1	3	1	1	1	1	1	1	1	3	3	1	1																		
CFM/Outlet	47	63	49	57	22	30	49	23	48	44	49	49	8	37																		
Act&Eff Len	165	150	150	195	180	205	155	170	170	180	180	140	175	170																		
Adj.Press	0.08	0.09	0.09	0.07	0.07	0.06	0.08	0.08	0.08	0.07	0.07	0.09	0.07	0.08																		
Pipe Size	5	6	5	5	5	5	5	5	5	5	5	5	5	5																		
Tr.Fl.Rate						269					212			306																		
TrunkWidth						**10**					**8**			**10**																		
Tr.Height						**8**					**8**			**8**																		
Velocity						484					478			551																		

Trunk	Z									
Inlet #	3R	1R	4R	2R						
CFM	255	140	90	90						
Inlet Size	30X6	14X8	6"	6"						
Act&Eff Len	210	200	150	160						
Adj.Press.	0.05	0.06	0.07	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:	T04 Dogwood	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

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Alexis Dearie-Vonk BCIN# 27098 HRAI# 3986

A. Dearie-Vonk

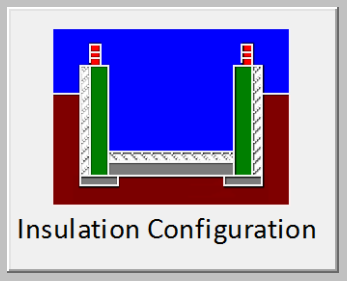
Envelope Air Leakage Calculator

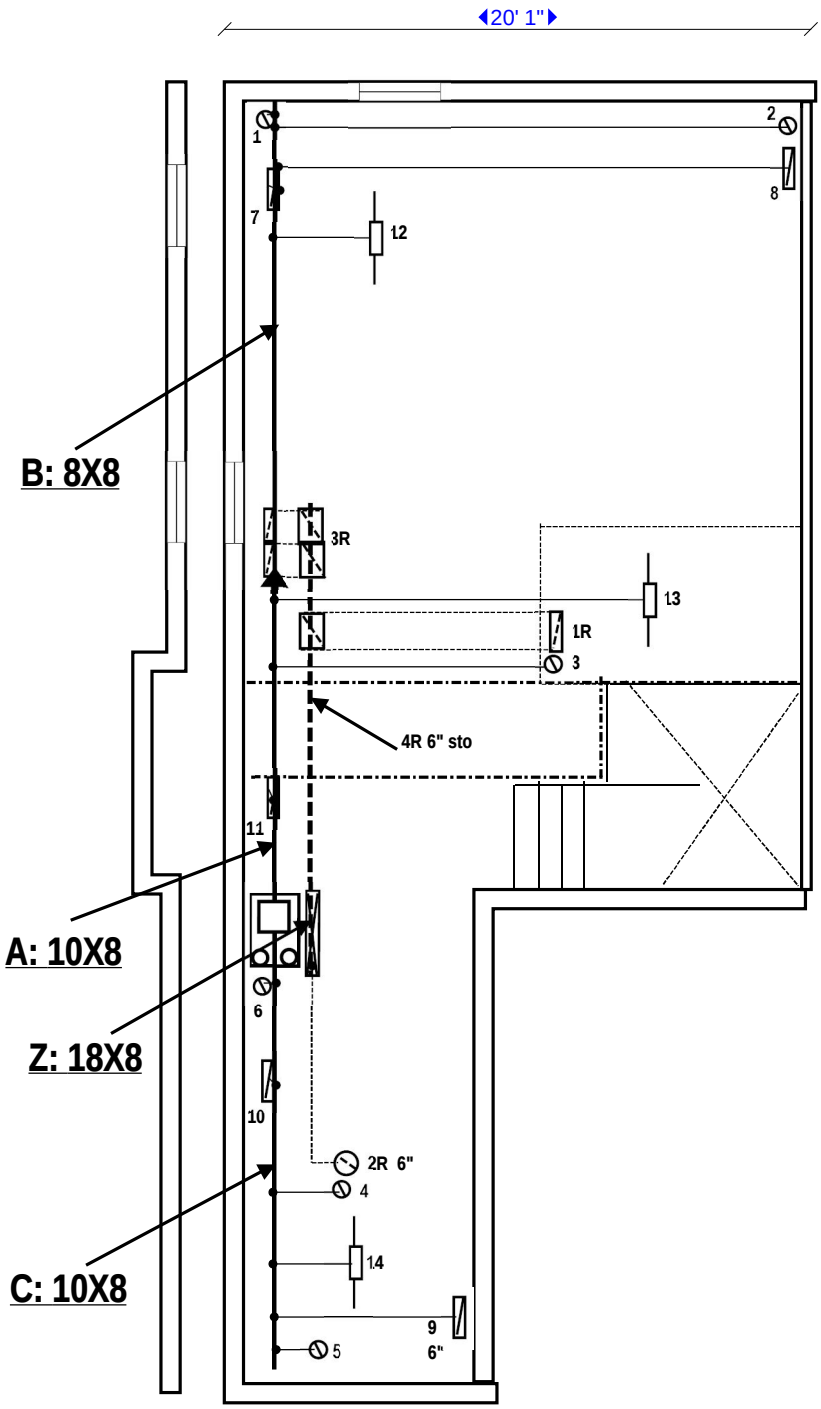
Supplemental tool for CAN/CSA-F280

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):	6.4			
Building Configuration				
Type:	Semi-Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m^3):	578			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (ACH=3.57)			
Custom BDT Data:	ELA @ 10 Pa.	731.22 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):	**0.203**			
Cooling Air Leakage Rate (ACH/H):	**0.019**			

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):	**6.1**	 Insulation Configuration
Floor Width (m):	**13.1**	
Exposed Perimeter (m):	**30.3**	
Wall Height (m):	**2.5**	
Depth Below Grade (m):	**1.9**	
Window Area (m^2):	**1.1**	
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):	**895**	



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

1678 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: 25369 BTU
Heat Gain: 19641 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	5	1
Basement	3	1

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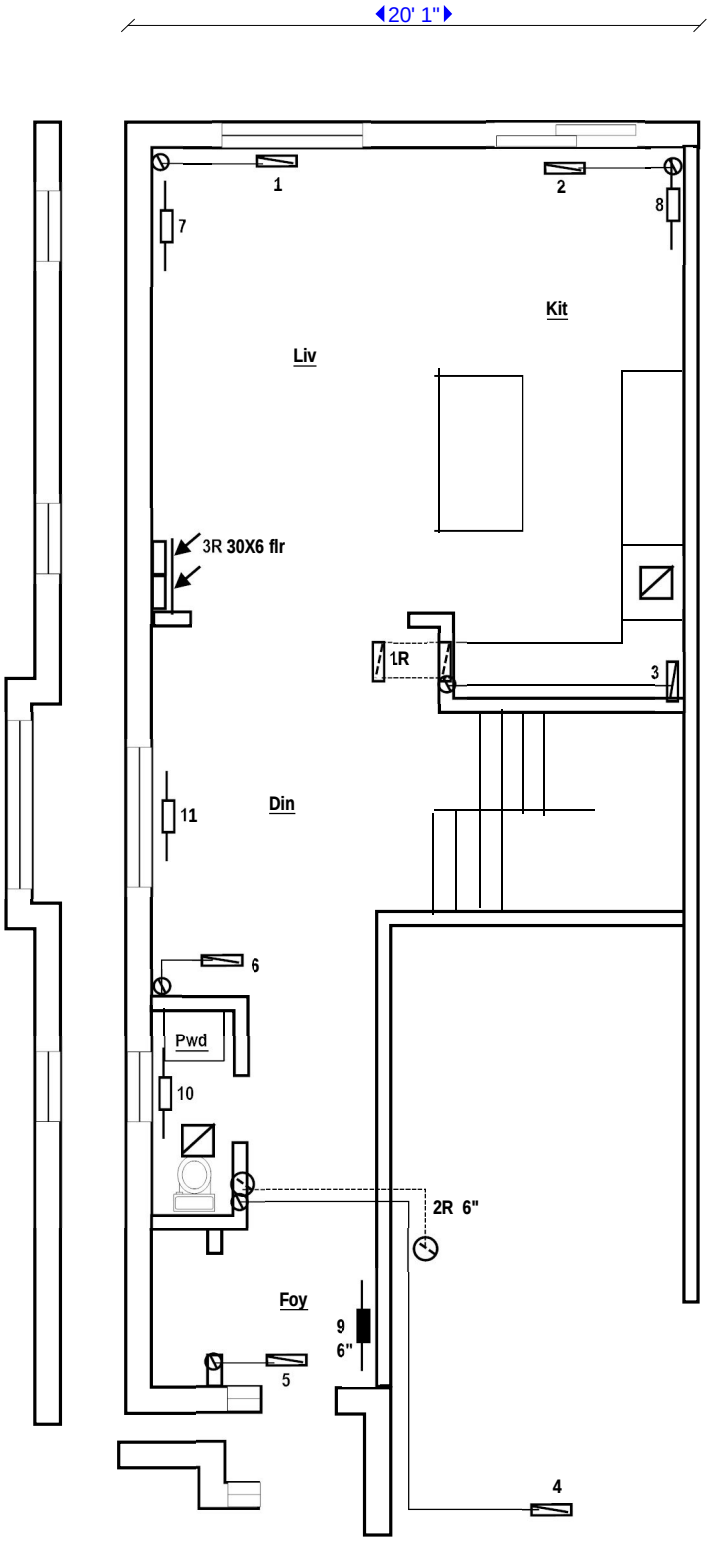
A Dearie-Vonk

Alexis Dearie-Vonk 27098 BCIN 3986 HRAI

Type	T04 Dogwood
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#	6916



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					

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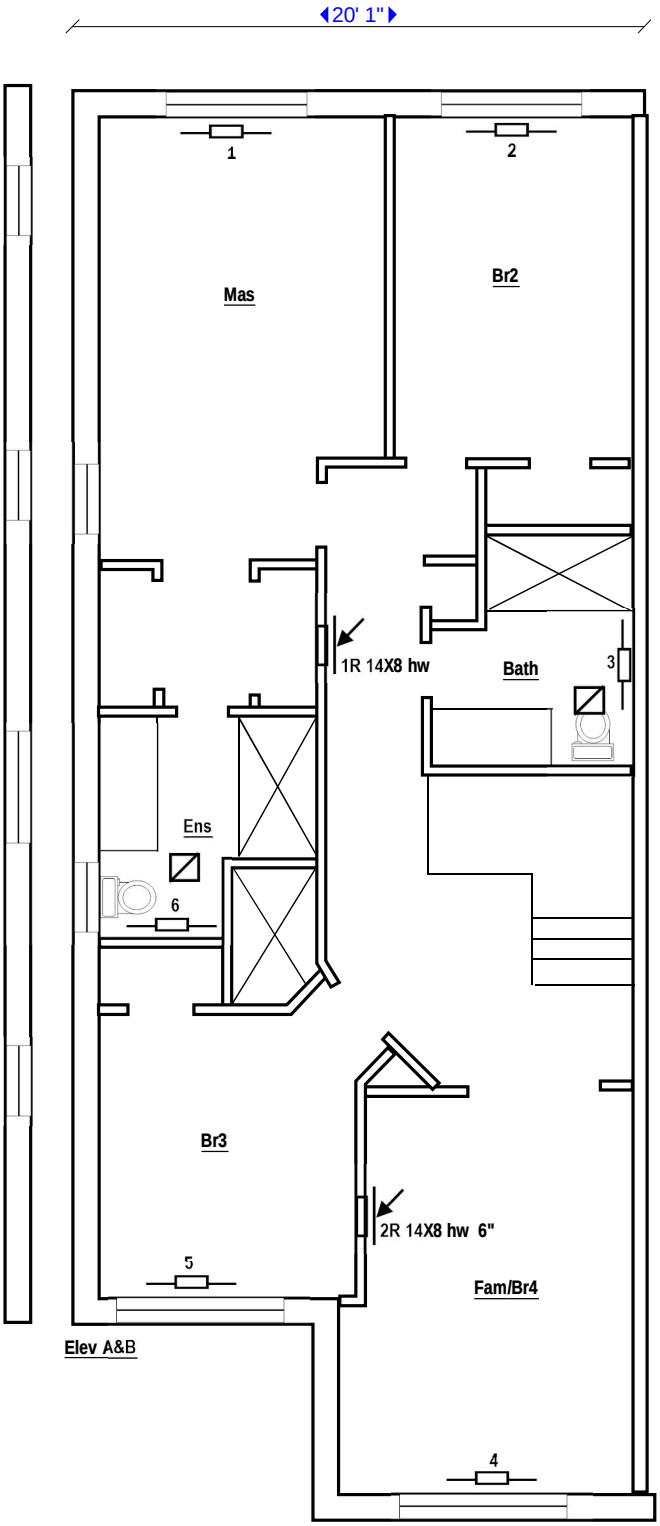
A Dearie-Vonk

Alexis Dearie-Vonk 27098 BCIN 3986 HRAI

Type	T04 Dogwood
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#	6916



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					

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A Dearie-Vonk

Alexis Dearie-Vonk 27098 3986
BCIN HRAI

Type	T04 Dogwood
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#	6916