

MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL

Housetype T03 Interior

File # 6913

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
☒ 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
☒ 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) 127
Less Principal Exhaust Capacity (HRV) 70
Required Supp.Vent Capacity CFM 57

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 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 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 22 f

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Alexis Dearie-Vonk BCIN# 27098 HRAI# 3986

Alexis Dearie-Vonk

Customer Esquire
Housetype T03 Interior
File # 6913
Date May-15
Township Ajax

	Eff	Ens		Mas		Bath		Br2		Br3		Great		Kit		Foy/Pwd																				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		
Width	20.8	5		14		14		10		10		19		19		10																		25			
Length		36		18		8		14		10		13		10		20																		26			
Area		180		252		112		140		100		247		190		200																			650		
Height		8		8		8		8		9		9		9		9																			8		
LinFtWall		5		14		1		10		14		19		10		30																			57		
Gr.Wall		40		112		8		80		126		171		90		270																					
Net Wall		26	95	86	314	8	29	62	227	102	373	105	384	90	329	246	899																				
Windows																																					
E,W		14	340	26	631			18	437	24	583	66	1603			24	583																		3	73	
S																																					
N																																					
Skylight	3.13																																				
Door	4														42	798																	21	399			
Ceiling	49.2	180	278	252	389	112	173	140	216	100	154																										
Cold Flr	27.7							140	384	20	55																										
Header	20.8											19	69	10	37	30	110																				
HL bgcr																																			3021		
SlabHLbgcr																																					
People/App			1				1		1		1		3																								
HL agcr			713		1335		202		1264		1165		2056		365		2389																				
HL airr	2	253	2	474	2	72	2	448	2	413	1	1064	1	189	1	1237																			2416		
HL dr							140	171	20	158																											
Tot.Rm.Loss BTU		966		1808		274		1884		1736		3120		555		3626																			5437		

HL airb= 524 / 3.6 X 42 X 1.2 X 0.19 1410 W X 3.41 4810 BTU
BasementHLR 747 W X 3.41 2549 BTU

Hlairr Multipliers	2nd BTU	4679	0.21
	1st BTU	4810	0.3
	Bsmt BTU	3021	0.8

All Calculations based on CAN/CSAF280 and HRAI Digest Standards

Total Structure Heat Loss 19405
Mech.Vent Loss NA
TOTAL HEAT LOSS BTU 19405

NEWRES HVAC DESIGN

Heat Gain Calculation

9 Hurontario street
Orangeville Ont
L9W 1Y8
416-320-5870

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

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Alexis Dearie-Vonk

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Date May-15
Township Ajax

	Fac	Ens		Mas		Bath		Br2		Br3		Great		Kit		Foy/Pwd																		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		
Width	20.8	5		14		14		10		10		19		19		10																	25		
Length		36		18		8		14		10		13		10		20																	26		
Area		180		252		112		140		100		247		190		200																	650		
Height		8		8		8		8		9		9		9		9																	8		
LinFtWall		5		14		1		10		14		19		10		30																	57		
Gr.Wall		40		112		8		80		126		171		90		270																			
Net Wall		26	18	86	58	8	5	62	42	102	69	105	71	90	61	246	166																		
Windows																																			
E,W		285	14	539	26	942			18	673	24	874	66	2285			24	874															3	169	
S		160																																	
N		93																																	
Skylight		534																																	
Door		4															42	147															21	74	
Ceiling		49.2	180	154	252	215	112	96	140	120	100	85																							
Cold Flr		27.7							140	45	20	6																							
Header		20.8											19	13	10	7	30	20															57	38	
HG svr																																			
HG dr								335		1																									
Total Cond			710		1215		101		880		1035		2369		67		1207																281		
Air Leak.			5		9		1		7		8		18		1		9																2		
Peop/App				1	240			1	240	1	240	1	240	3	1604																				
HG sr		715		1464		102		1461		1284		2627		1672		1217																		283	

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 7864 BTU

All Calculations based on CAN/CSAF280 and HRAI Digest Standards

Total Structure Heat Gain 10825
Latent Load Multiplier 1.3
Total Heat Gain BTU 14072

NEWRES HVAC DESIGN

9 Hurontario street
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L9W 1Y8
416-320-5870

Duct Calculation

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residential HVAC design. Alexis Dearie-Vonk
Alexis Dearie-Vonk BCIN# 27098 HRAI# 3986

Customer Esquire
Housetype T03 Interior
File # 6913
Date May-15
Township Ajax

Trunk	B						A																									
Outlet #	5	9	12	8	4	3	1	6	2	10	7	11																				
Outlet Loc	Br3	Foy/Pwd	Bsmt	Foy/Pwd	Br2	Bath	Ens	Great	Mas	Bsmt	Kit	Bsmt																				
BTU/RM	1736	3626	5437	3626	1884	274	966	3120	1808	5437	555	5437																				
# Out/Rm	1	2	3	2	1	1	1	1	1	3	1	3																				
CFM/Outlet	51	54	54	54	56	8	29	92	54	54	16	54																				
Act&Eff Len	175	150	155	165	200	200	155	160	185	180	190	195																				
Adj.Press	0.07	0.09	0.08	0.08	0.07	0.07	0.08	0.08	0.07	0.07	0.07	0.07																				
Pipe Size	5	5	5	5	5	5	5	6	5	5	5	5																				
Tr.Fl.Rate						277						298																				
TrunkWidth						10						10																				
Tr.Height						8						8																				
Velocity						498						537																				

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	
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:	T03 Interior 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				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:	2X6 @16"OC R24 Brick or Siding				Style A:	R20 Full Height Insulation	
Style B:					Style B:		
Style C:					Style C:		
Style D:					Style D:		
Floors on Soil				Ceilings			
Style A:	No Bsmt Insul below frost line				Style A:	R50 Batt Insulation	
Style B:					Style B:		
Exposed Floors				Doors			
Style A:	R31-Garage Ceil				Style A:	R4 Insulated	
Style B:					Style B:		
Windows				Skylights			
Style A:	Assumed Dbl Low E Argon operable R3.13				Style C:		
Style B:					Style A:		
Style C:					Style B:		
Style D:							
Att.Docs:							
Notes:							
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						

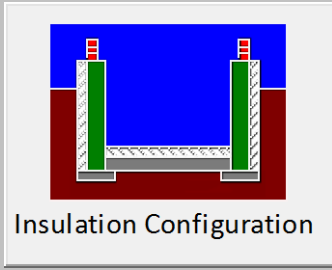
Envelope Air Leakage Calculator

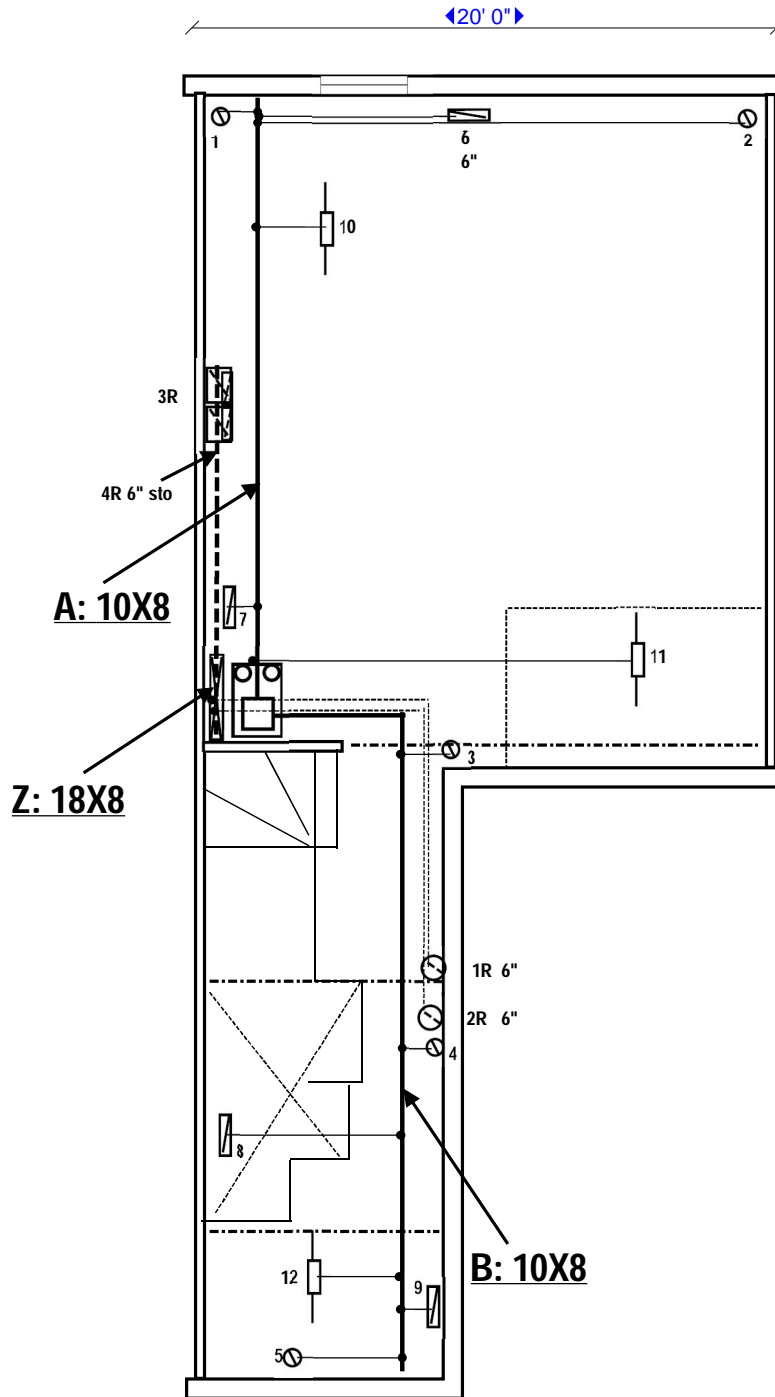
Supplemental tool for CAN/CSA-F280

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:	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	 <p>Insulation Configuration</p>
Floor Width (m):	5.7	
Exposed Perimeter (m):	17.4	
Wall Height (m):	2.5	
Depth Below Grade (m):	1.9	
Window Area (m ²):	0.27	
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):		747



Notes:

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

1509 SF

(Or Equivalent Furnace)

All runs 5" unless otherwise specified

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: 19405 BTU

Heat Gain: 14072 BTU

River Run Ajax

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	5		2
1st Floor	4		1
Basement	3		1

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Alexis Dearie-Vonk

Alexis Dearie-Vonk 27098 3986
BCIN HRAI

Type T03 Interior Tall Grass

Floor Basement

Scale 3/16"=1'0"

Date May-15

Revised

NewRes
HVAC Design

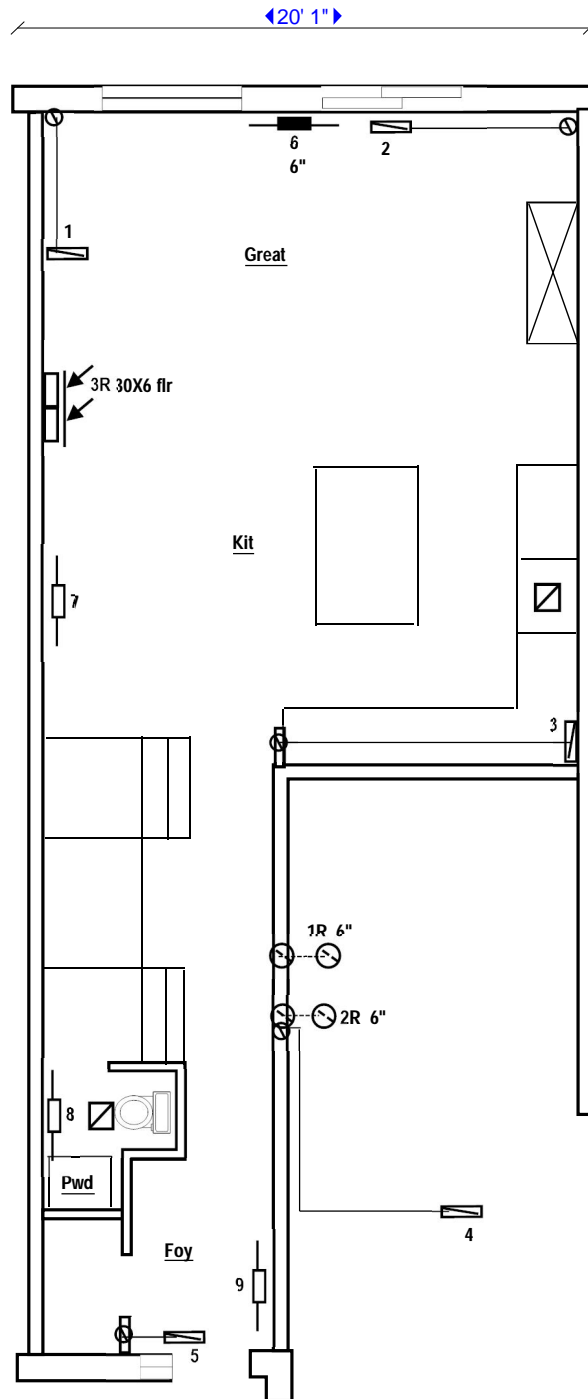
9 Hurontario st Orangeville On L9W 1Y8
Phone (416) 320-5870

Client

Esquire

LO#

6913



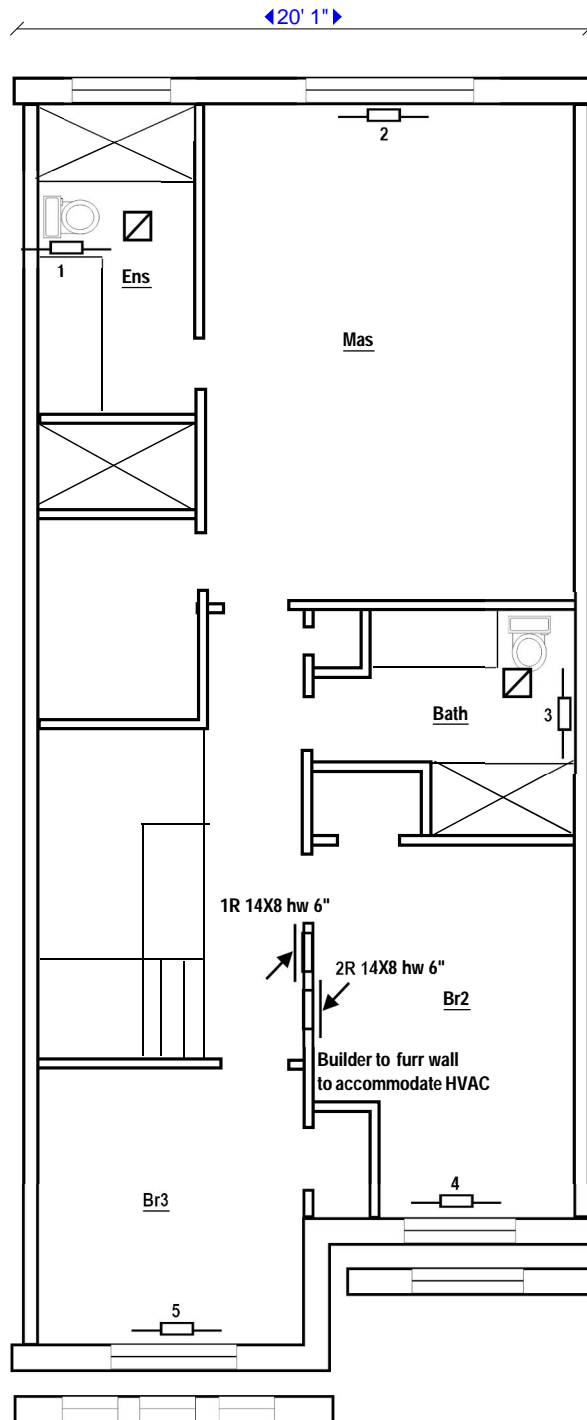
River Run Ajax

UNIT DATA			Type	T03 Interior Tall Grass	NewRes HVAC Design
Make	Model	Output			
Input	BTU	Output	Floor	First	9 Hurontario st Orangeville On L9W 1Y8 Phone (416) 320-5870
Cooling	Tons	Fan	Scale	3/16"=1'0"	
No. of Runs	S/A	R/A	Date	May-15	Client
2nd Floor			Revised		LO#
1st Floor					6913
Basement					

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BCIN HRAI



River Run Ajax

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	T03 Interior Tall Grass		NewRes HVAC Design 9 Hurontario st Orangeville On L9W 1Y8 Phone (416) 320-5870
Input		Output			Floor	Second		
Cooling		Fan			Scale	3/16"=1'0"		
Tons		Cfm			Date	May-15		
No. of Runs	S/A		R/A		Revised	LO#		
2nd Floor							Client	
1st Floor							Esquire	
Basement						6913		