

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information				
Building number, street name			Unit no.	Lot/con.
Municipality BRAMPTON	Postal code	Plan number/ other description		
B. Individual who reviews and takes responsibility for design activities				
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.		
Street address 375 FINLEY AVE		Unit no. 202	Lot/con. N/A	
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdsgns.ca	
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()		
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]				
☐ House ☐ Small Buildings ☐ Large Buildings ☐ Complex Buildings ☒ HVAC – House ☐ Building Services ☐ Detection, Lighting and Power ☐ Fire Protection ☐ Building Structural ☐ Plumbing – House ☐ Plumbing – All Buildings ☐ On-site Sewage Systems				
Description of designer's work HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12		Model: 3001 OPT 3 BATH Project: SUMMER RIDGE ESTATES		
D. Declaration of Designer				
I, <u>MICHAEL O'ROURKE</u> (print name)		declare that (choose one as appropriate):		
☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____				
☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>				
☐ The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____				
I certify that:				
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.				
May 16, 2024		 Signature of Designer		
Date				

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Application for a Permit Construct or Demolish – Effective January 1, 2015

SITE NAME: SUMMER RIDGE ESTATES										OPT 3 BATH						DATE: May-24				WINTER NATURAL AIR CHANGE RATE 0.282						HEAT LOSS ΔT °F. 74				CSA-F280-12							
BUILDER: ROYAL PIE HOMES										TYPE: 3001						GFA: 2277				LO# 105056				SUMMER NATURAL AIR CHANGE RATE 0.088						HEAT GAIN ΔT °F. 11				PERFORMANCE			
ROOM USE			PRI			ENS			BED-2			BED-3			BATH			ENS-2																			
EXP. WALL			39			24			25			36			0			9																			
CLG. HT.			9			9			9			9			9			9																			
FACTORS																																					
GRS.WALL AREA			LOSS GAIN			351			216			225			324			0			81																
GLAZING			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN																			
NORTH	20.8	12.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0										
EAST	20.8	32.9	0	0	0	0	0	0	50	1039	1646	52	1080	1711	0	0	0	0	0	0	0	0	0	0	0	0	0										
SOUTH	20.8	19.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	374	357	0	0											
WEST	20.8	32.9	36	748	1185	18	374	592	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
SKYLT.	34.1	132.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
DOORS	19.6	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
NET EXPOSED WALL	3.5	0.5	315	1092	162	198	687	102	175	607	90	272	943	140	0	0	0	0	0	0	0	63	218	32	0	0											
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
EXPOSED CLG	1.3	0.6	428	536	239	129	162	72	179	224	100	241	302	134	114	143	64	0	0	0	0	65	81	36	0	0											
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	179	446	66	0	0	0	56	139	21	0	0	0	0	0	0	0	0	0											
BASEMENT/CRAWL HEAT LOSS			0			0			0			0			0			0				0															
SLAB ON GRADE HEAT LOSS			0			0			0			0			0			0				0															
SUBTOTAL HT LOSS				2376			1222			2316			2325			282						674															
SUB TOTAL HT GAIN					1585			766			1901			1986			84							425													
LEVEL FACTOR / MULTIPLIER			0.20	0.23		0.20	0.23		0.20	0.23		0.20	0.23		0.20	0.23					0.20	0.23															
AIR CHANGE HEAT LOSS				545			280			531			533			65						155															
AIR CHANGE HEAT GAIN					86			41			103			107			5							23													
DUCT LOSS			0			0				285			0			35						0															
DUCT GAIN				0		0				328			0			9						0															
HEAT GAIN PEOPLE	240		2		480	0		0	1	240		1	240		0		0				0		0														
HEAT GAIN APPLIANCES/LIGHTS					1037			0		1037			1037			0						0															
TOTAL HT LOSS BTU/H					2921			1502			3131			2859			382					828															
TOTAL HT GAIN x 1.3 BTU/H					4144			1050			4691			4380			127					583															

ROOM USE			DEN			KT/FM			ENTRY			LAUN			W/R			FOY			MUD									BAS					
EXP. WALL			18			50			16			12			13			20			11									128					
CLG. HT.			10			10			10			9			10			10			10									9					
FACTORS																																			
GRS.WALL AREA			LOSS GAIN			180			500			160			108			130			200			110			768								
GLAZING			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN								
NORTH			20.8	12.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
EAST			20.8	32.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	706	1119	0	0	0	0	0	0	0	0	0	0				
SOUTH			20.8	19.8	20	416	397	20	416	397	0	0	0	20	416	397	10	208	198	0	0	0	0	0	0	0	0	0	8	166	159				
WEST			20.8	32.9	0	0	0	83	1724	2732	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	83	132					
SKYLT.			34.1	132.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
DOORS			19.6	2.9	0	0	0	10	196	29	20	392	58	0	0	0	0	0	0	21	411	61	20	392	58	20	392	58	20	392	58				
NET EXPOSED WALL			3.5	0.5	160	555	82	387	1342	199	140	485	72	88	305	45	120	416	62	145	503	75	90	312	46	0	0	0	0	0	0	0			
NET EXPOSED BSMT WALL ABOVE GR			3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	384	1349	200					
EXPOSED CLG			1.3	0.6	0	0	0	0	0	0	0	0	0	100	125	56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
NO ATTIC EXPOSED CLG			2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
EXPOSED FLOOR			2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
BASEMENT/CRAWL HEAT LOSS					0			0			0		0			0			0			0			0			4344							
SLAB ON GRADE HEAT LOSS					0			0			0		0			0			0			0			0										
SUBTOTAL HT LOSS					970			3678			877		846			624			1620			704						6334							
SUB TOTAL HT GAIN						479			3356		130		498			260			1254			104													
LEVEL FACTOR / MULTIPLIER				0.30	0.41		0.30	0.41		0.30	0.41		0.20	0.23		0.30	0.41		0.30	0.41		0.30	0.41				0.50	0.91							
AIR CHANGE HEAT LOSS					396			1499			357		194			254			660			287						5756							
AIR CHANGE HEAT GAIN						26			181		7		27		14			68			6							30							
DUCT LOSS					0			0			0		0			0			0			0						0							
DUCT GAIN					0			0			0		0			0			0			0						0							
HEAT GAIN PEOPLE			240		0			0		0		0		0		0		0	0		0	0					0								
HEAT GAIN APPLIANCES/LIGHTS						1037			1037		0		1037			0			0			0						0							
TOTAL HT LOSS BTU/H					1366			5177			1234		1040			878			2281			990						12089							
TOTAL HT GAIN x 1.3 BTU/H					2004			5946			178		2029			356			1719			143						209							

SITE NAME: SUMMER RIDGE ESTATES
BUILDER: ROYAL PIE HOMES

OPT 3 BATH
TYPE: 3001

DATE: May-24

GFA: 2277 LO# 105056

HEATING CFM 925 COOLING CFM 925
TOTAL HEAT LOSS 36,679 TOTAL HEAT GAIN 29,449
AIR FLOW RATE CFM 25.22 AIR FLOW RATE CFM 31.41

furnace pressure 0.6
furnace filter 0.00
a/c coil pressure 0.26
available pressure for s/a & r/a 0.34

FACTORY INSTALLED

59SC6A040M14--10 CARRIER

AFUE = 96 %
INPUT (BTU/H) = 40,000
OUTPUT (BTU/H) = 39,000

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	10	8	4
R/A	0	0	4	2	1

plenum pressure s/a 0.18 r/a pressure 0.16
max s/a dif press. loss 0.01 r/a grille press. Loss 0.02
min adjusted pressure s/a 0.17 adjusted pressure r/a 0.14

FAN SPEED 40
LOW 0
MEDLOW 0
MEDIUM 0
MEDIUM HIGH 925
HIGH 0

DESIGN CFM = 925
CFM @ .6" E.S.P.

TEMPERATURE RISE 39 °F

All S/A diffusers 4"x10" unless noted otherwise on layout.

All S/A runs 5"Ø unless noted otherwise on layout.

RUN #	1	2	4	5	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	PRI	ENS	BED-2	BED-3	BATH	BED-2	BED-3	PRI	ENS-2	DEN	KT/FM	KT/FM	KT/FM	ENTRY	LAUN	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.46	1.50	1.57	1.43	0.38	1.57	1.43	1.46	0.83	1.37	1.73	1.73	1.73	1.23	1.04	0.88	2.28	0.99	3.02	3.02	3.02	3.02
CFM PER RUN HEAT	37	38	39	36	10	39	36	37	21	34	44	44	44	31	26	22	58	25	76	76	76	76
RM GAIN MBH.	2.07	1.05	2.35	2.19	0.13	2.35	2.19	2.07	0.58	2.00	1.98	1.98	1.98	0.18	2.03	0.36	1.72	0.14	0.52	0.52	0.52	0.52
CFM PER RUN COOLING	65	33	74	69	4	74	69	65	18	63	62	62	62	6	64	11	54	4	16	16	16	16
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	70	77	31	25	41	34	29	62	31	6	41	56	47	24	33	14	22	29	41	24	10	15
EQUIVALENT LENGTH	160	160	160	120	150	170	150	180	210	180	120	170	140	160	150	120	110	110	160	100	140	140
TOTAL EFFECTIVE LENGTH	230	237	191	145	191	204	179	242	241	186	161	226	187	184	183	134	132	139	201	124	150	155
ADJUSTED PRESSURE	0.07	0.07	0.09	0.12	0.09	0.08	0.09	0.07	0.07	0.09	0.1	0.07	0.09	0.09	0.09	0.12	0.13	0.12	0.08	0.13	0.11	0.11
ROUND DUCT SIZE	6	5	5	5	4	5	5	6	4	5	6	6	5	4	5	4	5	4	6	5	5	5
HEATING VELOCITY (ft/min)	189	279	286	264	115	286	264	189	241	250	224	224	323	356	191	252	426	287	388	558	558	558
COOLING VELOCITY (ft/min)	331	242	543	507	46	543	507	331	207	463	316	316	455	69	470	126	396	46	82	117	117	117
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10
TRUNK	A	A	C	C	B	C	C	A	C	B	B	A	A	B	B	C	C	B	A	B	B	A

RUN #	ROOM NAME	RM LOSS MBH.	CFM PER RUN HEAT	RM GAIN MBH.	CFM PER RUN COOLING	ADJUSTED PRESSURE	ACTUAL DUCT LGH.	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	ROUND DUCT SIZE	HEATING VELOCITY (ft/min)	COOLING VELOCITY (ft/min)	OUTLET GRILL SIZE	TRUNK
1	PRI	1.46	37	2.07	65	0.17	70	160	230	0.07	6	189	331	4X10	A
2	ENS	1.50	38	1.05	33	0.17	77	160	237	0.07	5	279	242	3X10	A
4	BED-2	1.57	39	2.35	74	0.17	31	160	191	0.09	5	286	543	3X10	C
5	BED-3	1.43	36	2.19	69	0.17	25	120	145	0.12	5	264	507	3X10	C
7	BATH	0.38	10	0.13	4	0.17	41	150	191	0.09	4	115	46	3X10	B
8	BED-2	1.57	39	2.35	74	0.17	34	170	204	0.08	5	286	543	3X10	C
9	BED-3	1.43	36	2.19	69	0.17	29	150	179	0.09	5	264	507	3X10	C
10	PRI	1.46	37	2.07	65	0.17	62	180	242	0.07	6	189	331	4X10	A
11	ENS-2	0.83	21	0.58	18	0.17	31	210	241	0.07	4	241	207	3X10	C
12	DEN	1.37	34	2.00	63	0.17	6	180	186	0.09	5	250	463	3X10	B
13	KT/FM	1.73	44	1.98	62	0.17	41	120	161	0.1	6	224	316	4X10	B
14	KT/FM	1.73	44	1.98	62	0.17	56	170	226	0.07	6	224	316	4X10	A
15	KT/FM	1.73	44	1.98	62	0.17	47	140	187	0.09	5	323	455	3X10	A
16	ENTRY	1.23	31	0.18	6	0.17	24	160	184	0.09	4	356	69	3X10	B
17	LAUN	1.04	26	2.03	64	0.17	33	150	183	0.09	5	191	470	3X10	B
18	W/R	0.88	22	0.36	11	0.17	14	120	134	0.12	4	252	126	3X10	C
19	FOY	2.28	58	1.72	54	0.17	22	110	132	0.13	5	426	396	3X10	C
20	MUD	0.99	25	0.14	4	0.17	29	160	201	0.08	4	287	46	3X10	B
21	BAS	3.02	76	0.52	16	0.17	41	100	124	0.13	6	388	82	4X10	A
22	BAS	3.02	76	0.52	16	0.17	24	100	124	0.13	5	558	117	3X10	B
23	BAS	3.02	76	0.52	16	0.17	10	140	150	0.11	5	558	117	3X10	B
24	BAS	3.02	76	0.52	16	0.17	15	140	155	0.11	5	558	117	3X10	A

SUPPLY AIR TRUNK SIZE													RETURN AIR TRUNK SIZE												
	TRUNK	STATIC	ROUND	RECT			VELOCITY		TRUNK	STATIC	ROUND	RECT			VELOCITY		TRUNK	STATIC	ROUND	RECT			VELOCITY		
	CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)		
TRUNK A	352	0.07	9.8	12	x	8	528	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.05	0	0	x	8	0		
TRUNK B	674	0.07	12.5	18	x	8	674	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.05	0	0	x	8	0		
TRUNK C	251	0.07	8.6	8	x	8	565	TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.05	0	0	x	8	0		
TRUNK D	0	0.00	0	0	x	8	0	TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.05	0	0	x	8	0		
TRUNK E	0	0.00	0	0	x	8	0	TRUNK K	0	0.00	0	0	x	8	0	TRUNK S	0	0.05	0	0	x	8	0		
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	x	8	0	TRUNK T	0	0.05	0	0	x	8	0		

RETURN AIR #	1	2	3	4	5	6	BR
FLOOR	2	2	2	2	1	1	B
AIR VOLUME	115	75	95	100	105	284	151
PLENUM PRESSURE	0.14	0.14	0.14	0.14	0.14	0.14	0.14
ACTUAL DUCT LGH.	65	61	44	73	17	18	14
EQUIVALENT LENGTH	215	215	155	220	155	210	135
TOTAL EFFECTIVE LH	280	276	199	293	172	228	149
ADJUSTED PRESSURE	0.05	0.05	0.07	0.05	0.08	0.06	0.10
ROUND DUCT SIZE	7	6	6	6.7	6	9.4	6.5
INLET GRILL SIZE	8	8	8	8	8	8	8
	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	30	14

TYPE: 3001
SITE NAME: SUMMER RIDGE ESTATES

LO # 105056
OPT 3 BATH

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES		9.32.3.1(1)
a)	☒ Direct vent (sealed combustion) only	
b)	☐ Positive venting induced draft (except fireplaces)	
c)	☐ Natural draft, B-vent or induced draft gas fireplace	
d)	☐ Solid Fuel (including fireplaces)	
e)	☐ No Combustion Appliances	

HEATING SYSTEM	
☒ Forced Air	☐ Non Forced Air
☐ Electric Space Heat	

HOUSE TYPE		9.32.1(2)
☒ I	Type a) or b) appliance only, no solid fuel	
☐ II	Type I except with solid fuel (including fireplaces)	
☐ III	Any Type c) appliance	
☐ IV	Type I, or II with electric space heat	
☐	Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS		O.N.H.W.P.
☐ 1	Exhaust only/Forced Air System	
☐ 2	HRV with Ducting/Forced Air System	
☒ 3	HRV Simplified/connected to forced air system	
☐ 4	HRV with Ducting/non forced air system	
☐	Part 6 Design	

TOTAL VENTILATION CAPACITY		9.32.3.3(1)
Basement + Master Bedroom	<u>2</u> @ 21.2 cfm <u>42.4</u> cfm	
Other Bedrooms	<u>2</u> @ 10.6 cfm <u>21.2</u> cfm	
Kitchen & Bathrooms	<u>5</u> @ 10.6 cfm <u>53</u> cfm	
Other Rooms	<u>4</u> @ 10.6 cfm <u>42.4</u> cfm	
Table 9.32.3.A.	TOTAL <u>159.0</u> cfm	

PRINCIPAL VENTILATION CAPACITY REQUIRED		9.32.3.4.(1)
1 Bedroom	31.8 cfm	
2 Bedroom	47.7 cfm	
3 Bedroom	63.6 cfm	
4 Bedroom	79.5 cfm	
5 Bedroom	95.4 cfm	
TOTAL <u>63.6</u> cfm		

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>159</u> cfm	
Less Principal Ventil. Capacity	<u>63.6</u> cfm	
Required Supplemental Capacity	<u>95.4</u> cfm	

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE V150H	Location: BSMT
<u>63.6</u> cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
63.6 CFM	X 74 F	X 1.08	X	0.25

SUPPLEMENTAL FANS		BY INSTALLING CONTRACTOR		
Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	☒	3.5
BATH	BY INSTALLING CONTRACTOR	50	☒	3.5
ENS-2	BY INSTALLING CONTRACTOR	50	☒	3.5
W/R	BY INSTALLING CONTRACTOR	50	☒	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE V150H		
<u>150</u> cfm high	<u>35</u> cfm low	
<u>75</u> % Sensible Efficiency	☒ HVI Approved	
@ 32 deg F (0 deg C)		

LOCATION OF INSTALLATION	
Lot:	Concession
Township	Plan:
Address	
Roll #	Building Permit #

BUILDER:	
ROYAL PIE HOMES	
Name:	
Address:	
City:	
Telephone #:	Fax #:

INSTALLING CONTRACTOR	
Name:	
Address:	
City:	
Telephone #:	Fax #:

DESIGNER CERTIFICATION	
I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.	
Name:	HVAC Designs Ltd.
Signature:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	May-24

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 105056	Model: 3001	Builder: ROYAL PIE HOMES	Date: 2024-05-16																																																									
Volume Calculation			Air Change & Delta T Data																																																									
House Volume <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr> <td>Bsmt</td> <td>1021</td> <td>9</td> <td>9189</td> </tr> <tr> <td>First</td> <td>1021</td> <td>10</td> <td>10210</td> </tr> <tr> <td>Second</td> <td>1256</td> <td>9</td> <td>11304</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>30,703.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>869.4 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1021	9	9189	First	1021	10	10210	Second	1256	9	11304	Third	0	9	0	Fourth	0	9	0	Total:			30,703.0 ft³	Total:			869.4 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 20%;">0.282</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.088</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> </thead> <tbody> <tr> <td>Winter DTDh</td> <td>22</td> <td>-19</td> <td>41</td> <td>74</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>30</td> <td>6</td> <td>11</td> </tr> </tbody> </table>		WINTER NATURAL AIR CHANGE RATE	0.282	SUMMER NATURAL AIR CHANGE RATE	0.088	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-19	41	74	Summer DTDc	24	30	6	11
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																									
Bsmt	1021	9	9189																																																									
First	1021	10	10210																																																									
Second	1256	9	11304																																																									
Third	0	9	0																																																									
Fourth	0	9	0																																																									
Total:			30,703.0 ft³																																																									
Total:			869.4 m³																																																									
WINTER NATURAL AIR CHANGE RATE	0.282																																																											
SUMMER NATURAL AIR CHANGE RATE	0.088																																																											
Design Temperature Difference																																																												
	Tin °C	Tout °C	ΔT °C	ΔT °F																																																								
Winter DTDh	22	-19	41	74																																																								
Summer DTDc	24	30	6	11																																																								
5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.282 x 241.50 x 41 °C x 1.2 = 3374 W = 11512 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.088 x 241.50 x 6 °C x 1.2 = 157 W = 534 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 64 CFM x 74 °F x 1.08 x 0.25 = 1274 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 64 CFM x 11 °F x 1.08 x 0.25 = 189 Btu/h																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HLairve Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{clevel})</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HL_{clevel})</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.5</td> <td rowspan="5" style="text-align: center; vertical-align: middle;">11,512</td> <td>6,334</td> <td>0.909</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>8,473</td> <td>0.408</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>10,042</td> <td>0.229</td> </tr> <tr> <td>4</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> <tr> <td>5</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> </tbody> </table> *HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0					Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HL _{clevel})	1	0.5	11,512	6,334	0.909	2	0.3	8,473	0.408	3	0.2	10,042	0.229	4	0	0	0.000	5	0	0	0.000																														
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HL _{clevel})																																																								
1	0.5	11,512	6,334	0.909																																																								
2	0.3		8,473	0.408																																																								
3	0.2		10,042	0.229																																																								
4	0		0	0.000																																																								
5	0		0	0.000																																																								
				Michael O'Rourke BCIN# 19669 																																																								

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 3001	OPT 3 BATH	BUILDER: ROYAL PIE HOMES
SFQT: 2277	LO# 105056	SITE: SUMMER RIDGE ESTATES

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.60

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.00	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	30703.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	2.20	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 51.0 ft	WIDTH: 26.0 ft	EXPOSED PERIMETER:	128.0 ft

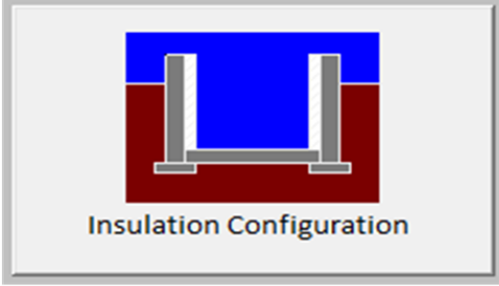
2012 OBC - COMPLIANCE PACKAGE Component	Compliance Package PERFORMANCE	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	21.40
Basement Walls Minimum RSI (R)-Value	20	21.12
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value	-	-
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13
Windows and Sliding Glass Doors Maximum U-Value	1.6	-
Skylights Maximum U-Value	2.6	-
Space Heating Equipment Minimum AFUE	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.9	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.5	 Insulation Configuration
Floor Width (m):	7.9	
Exposed Perimeter (m):	39.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
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):		1273

TYPE: 3001
LO# 105056

OPT 3 BATH

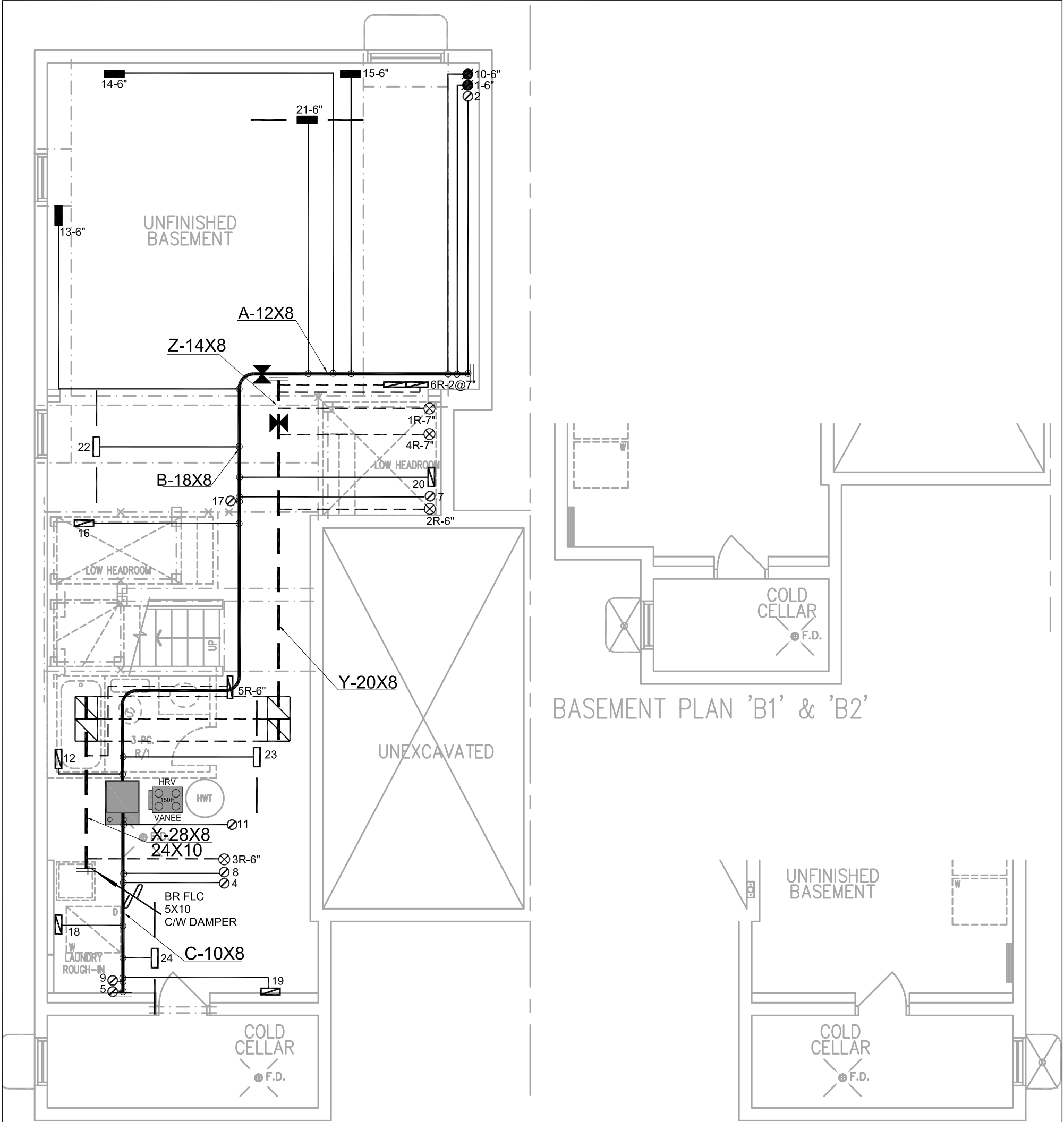
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

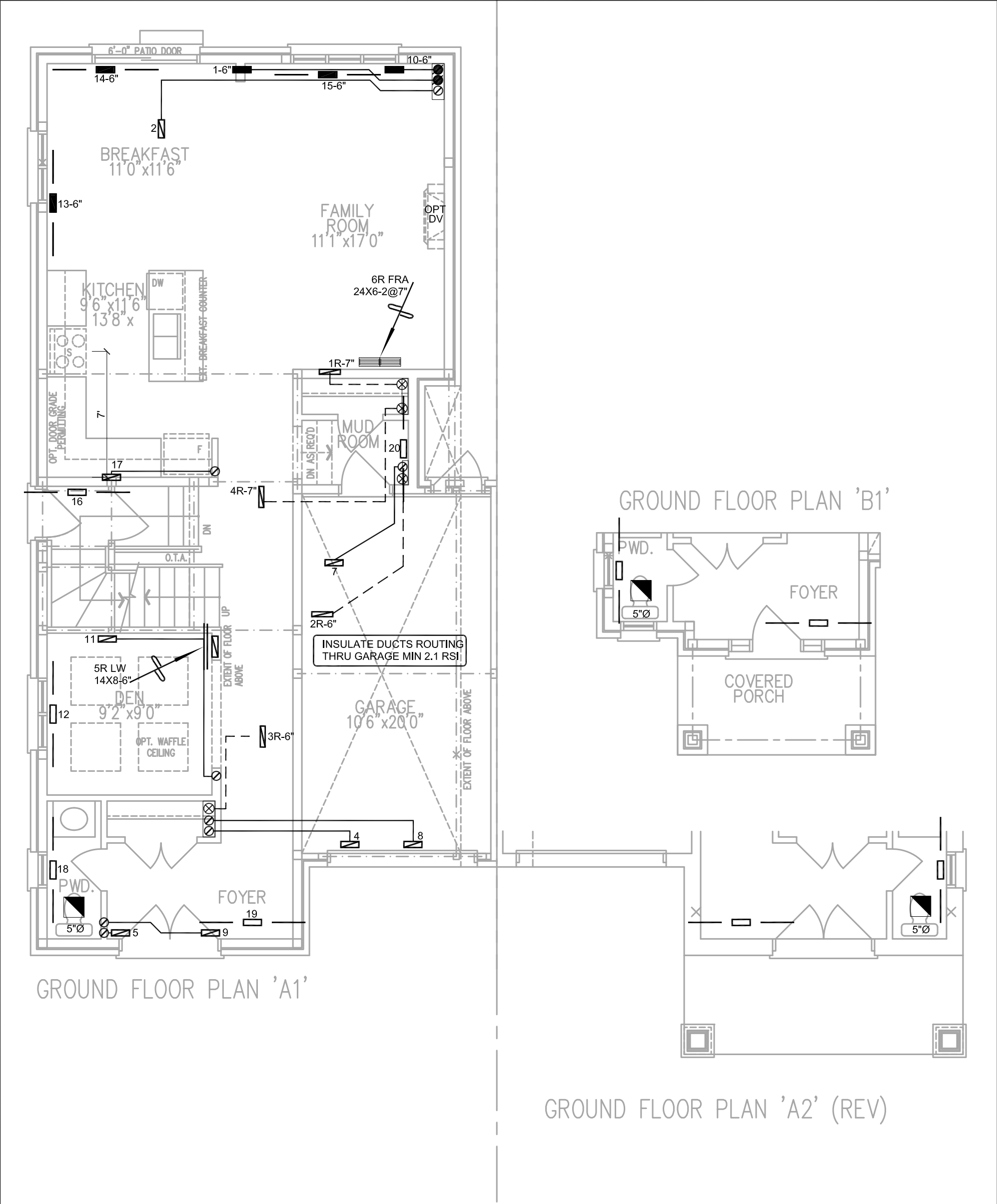
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.71			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	869.4			
Air Leakage/Ventilation				
Air Tightness Type:	Attached (3.0 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	973.9 cm ²		
	3.00	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	30.0	30.0		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.282			
Cooling Air Leakage Rate (ACH/H):	0.088			

TYPE: 3001
LO# 105056

OPT 3 BATH



HVAC LEGEND								3.								
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.								
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.								
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date						
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS								
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.						I Michael O'Rourke have reviewed and take responsibility for the design work and am qualified under division C.3.2.5 of the building code.		 Michael O'Rourke BCIN # 19669 HVAC Designs Ltd.		PERFORMANCE						
Client		375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services				HEAT LOSS 37953 BTU/H		# OF RUNS S/A R/A FANS		Sheet Title						
ROYAL PINE HOMES						UNIT DATA		3RD FLOOR							BASEMENT HEATING LAYOUT	
Project Name						CARRIER		2ND FLOOR		10	4	3				
SUMMER RIDGE ESTATES						MODEL		1ST FLOOR		8	2	2	Date	MAY/2024		
BRAMPTON, ONTARIO						INPUT		BASEMENT		4	1	0	Scale	3/16" = 1'-0"		
OPT 3 BATH		Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.				OUTPUT		ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A		BCIN# 19669						
3001						39 MBTU/H				COOLING		2.5 TONS		LO#		105056
2277 sqft						FAN SPEED				925 cfm @ 0.6" w.c.						



HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

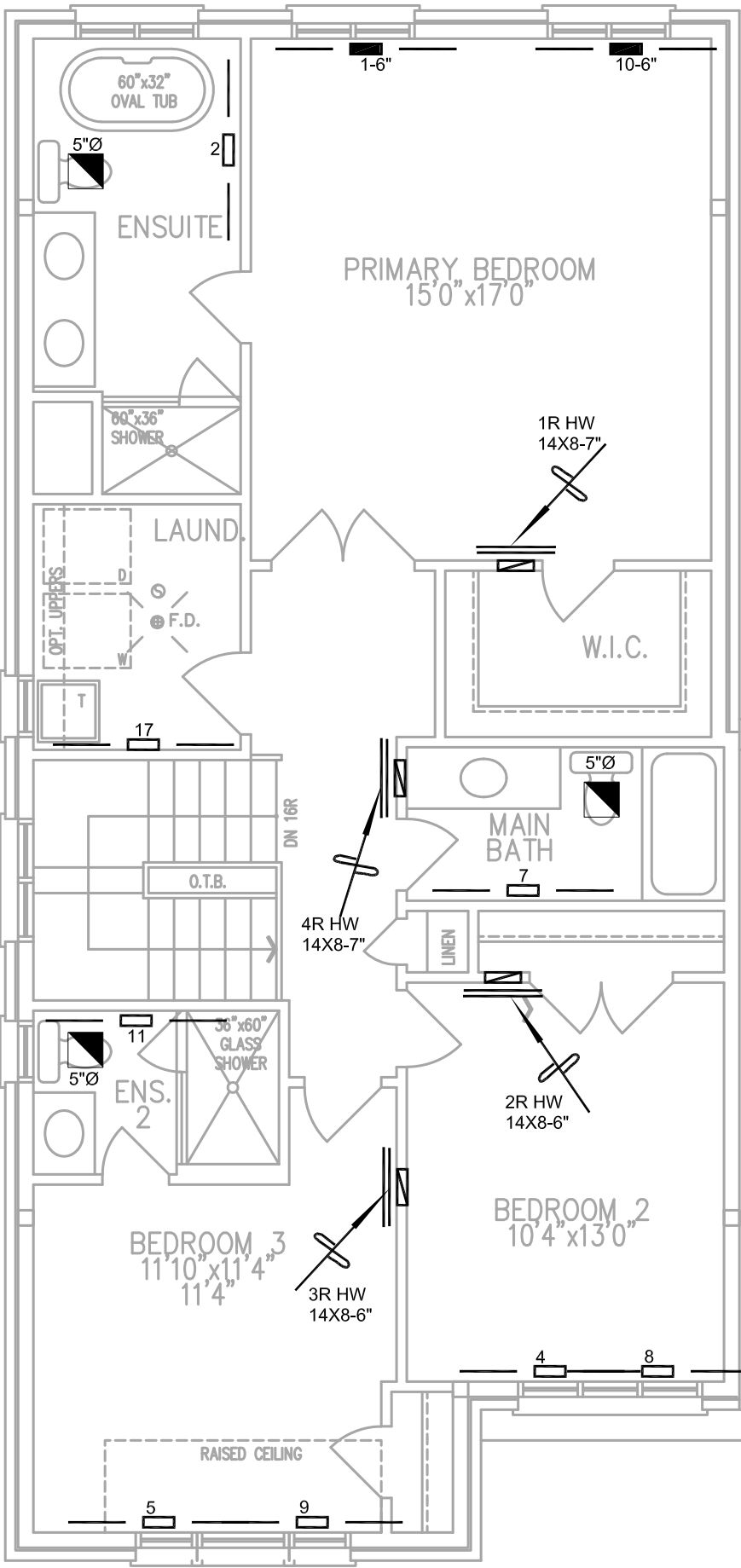
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

I Michael O'Rourke have reviewed and take responsibility for the design work and am qualified under division C.3.2.5 of the building code.

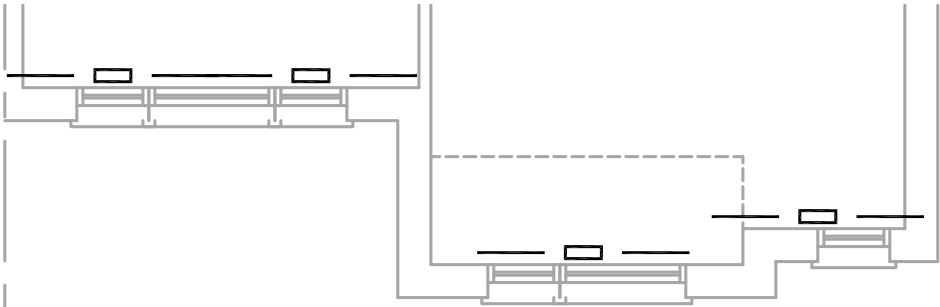
Michael O'Rourke BCIN # 19669
HVAC Designs Ltd.

PERFORMANCE

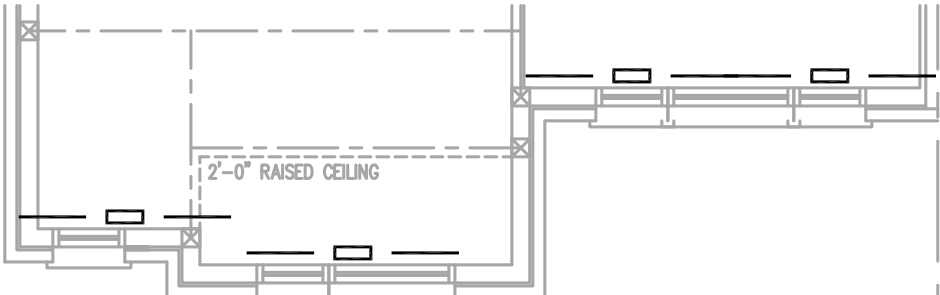
Client		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.	Sheet Title	
ROYAL PINE HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	MAY/2024
SUMMER RIDGE ESTATES BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
OPT 3 BATH 3001			BCIN# 19669	
2277 sqft		LO#	105056	



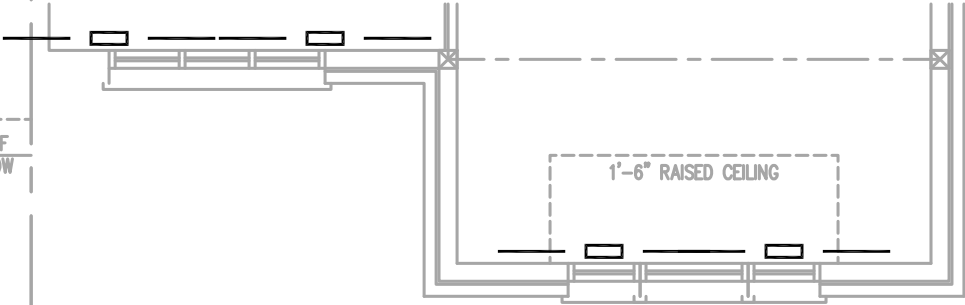
SECOND FLOOR PLAN 'A1'
OPT. 3 BATH CONDITION
(EL. 'A2' SIMILAR)



SECOND FLOOR PLAN 'B2' (REV.)



SECOND FLOOR PLAN 'B1'



SECOND FLOOR PLAN 'A2' (REV)

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.						I Michael O'Rourke have reviewed and take responsibility for the design work and am qualified under division C.3.2.5 of the building code.		 Michael O'Rourke BCIN # 19669 HVAC Designs Ltd.		PERFORMANCE
Client		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services						Sheet Title		
Project Name								SECOND FLOOR HEATING LAYOUT		
SUMMER RIDGE ESTATES BRAMPTON, ONTARIO								Date MAY/2024		
OPT 3 BATH 3001								Scale 3/16" = 1'-0"		
2277 sqft		Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.						BCIN# 19669		
								LO#	105056	