


## Schedule 1: Designer Information

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

<b>A. Project Information</b>				
Building number, street name			Unit no.	Lot/con.
Municipality BRAMPTON	Postal code	Plan number/ other description		
<b>B. Individual who reviews and takes responsibility for design activities</b>				
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 ( )		
<b>C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]</b>				
<input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings				
<input checked="" type="checkbox"/> HVAC – House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection				
<input type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> 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: 2504-END  Project: SUMMER RIDGE ESTATES		
<b>D. Declaration of Designer</b>				
I, <u>MICHAEL O'ROURKE</u> declare that (choose one as appropriate): (print name)				
<input type="checkbox"/> 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: _____				
<input checked="" type="checkbox"/> 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>				
<input type="checkbox"/> 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.				
June 11, 2024				
Date		Signature of Designer		

**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

BUILDER: ROYAL PINE HOMES

TYPE: 2504-END

GFA: 2027

DATE: Jun-24

LO# 105279

WINTER NATURAL AIR CHANGE RATE 0.298

SUMMER NATURAL AIR CHANGE RATE 0.097

HEAT LOSS AT °F. 74

HEAT GAIN AT °F. 11

CSA-F280-12

PERFORMANCE

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	MBR	ENS	BED-2	BED-3	BATH						
GRS.WALL AREA	LOSS	GAIN		387	225	207	270	0						
GLAZING				LOSS	GAIN	LOSS	GAIN	LOSS	GAIN					
NORTH	20.8	12.8	0	0	0	0	0	0	0					
EAST	20.8	32.9	0	0	0	32	665	1053	35	727	1152			
SOUTH	20.8	19.8	0	0	0	0	0	0	0	0	0			
WEST	20.8	32.9	26	540	856	17	353	560	0	0	0			
SKYLT.	34.1	132.1	0	0	0	0	0	0	0	0	0			
DOORS	19.6	2.9	0	0	0	0	0	0	0	0	0			
NET EXPOSED WALL	3.5	0.5	361	1252	186	175	607	90	235	815	121			
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0			
EXPOSED CLG	1.3	0.6	391	490	218	155	194	86	110	138	61			
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	50	134	60			
EXPOSED FLOOR	2.5	0.4	0	0	0	120	299	44	0	0	0			
BASEMENT/CRAWL HEAT LOSS				0	0	0	0	0	0	0	0			
SLAB ON GRADE HEAT LOSS				0	0	0	0	0	0	0	0			
SUBTOTAL HT LOSS				2282		1765		1814		393				
SUB TOTAL HT GAIN					1259		1274			101				
LEVEL FACTOR / MULTIPLIER			0.20	0.26	0.20	0.26	0.20	0.26	0.20	0.26				
AIR CHANGE HEAT LOSS				586		454		466		101				
AIR CHANGE HEAT GAIN					83		84			7				
DUCT LOSS				0		222		0		49				
DUCT GAIN				0	0	244		0		11				
HEAT GAIN PEOPLE	240		2	480	0	1	240	1	240	0	0			
HEAT GAIN APPLIANCES/LIGHTS				840	0		840		840	0				
TOTAL HT LOSS BTU/H				2868	1558	2440		2280		544				
TOTAL HT GAIN x 1.3 BTU/H				3462	1026	3487		3336		154				

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	LV/DN	K/B/F	LAUN	PWD	FOY	MUD					
GRS.WALL AREA	LOSS	GAIN		500	600	99	100	100	140					
GLAZING				LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN			
NORTH	20.8	12.8	0	0	0	0	0	0	0	0	0			
EAST	20.8	32.9	34	706	1119	0	0	0	0	0	0			
SOUTH	20.8	19.8	21	436	416	0	0	0	0	0	0			
WEST	20.8	32.9	0	0	0	73	1517	2403	0	0	0			
SKYLT.	34.1	132.1	0	0	0	0	0	0	0	0	0			
DOORS	19.6	2.9	0	0	0	0	0	0	0	0	0			
NET EXPOSED WALL	3.5	0.5	445	1543	229	527	1827	271	71	246	36			
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0			
EXPOSED CLG	1.3	0.6	0	0	0	80	100	45	0	0	0			
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0			
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0			
BASEMENT/CRAWL HEAT LOSS				0	0	0	0	0	0	0	0			
SLAB ON GRADE HEAT LOSS				0	0	0	0	0	0	0	0			
SUBTOTAL HT LOSS				2686		928		790		347				
SUB TOTAL HT GAIN					1764		636		51		120			
LEVEL FACTOR / MULTIPLIER			0.30	0.41	0.30	0.41	0.30	0.41	0.30	0.41				
AIR CHANGE HEAT LOSS				1093		239		322		141				
AIR CHANGE HEAT GAIN					117		42		3		8			
DUCT LOSS				0		0		0		0				
DUCT GAIN				0	0	0		0		0				
HEAT GAIN PEOPLE	240		0	0	0	0	0	0	0	0	0			
HEAT GAIN APPLIANCES/LIGHTS				840	840		840		0	0	0			
TOTAL HT LOSS BTU/H				3779	4705	1167		1112		488				
TOTAL HT GAIN x 1.3 BTU/H				3537	4798	1974		325		71				

TOTAL HEAT GAIN BTU/H:

24308

TONS: 2.03

LOSS DUE TO VENTILATION LOAD BTU/H: 1274

STRUCTURAL HEAT LOSS: 34605

TOTAL COMBINED HEAT LOSS BTU/H: 35879

SITE NAME: SUMMER RIDGE ESTATES  
BUILDER: ROYAL PINE HOMES

TYPE: 2504-END

DATE: Jun-24

GFA: 2027

LO# 105279

HEATING CFM 770 COOLING CFM 770  
TOTAL HEAT LOSS 34,605 TOTAL HEAT GAIN 24,119  
AIR FLOW RATE CFM 22.25 AIR FLOW RATE CFM 31.93

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	9	7	3
R/A	0	0	4	2	1

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

FAN SPEED 40  
LOW 0  
MEDLOW 545  
MEDIUM 770  
MEDIUM HIGH 925  
HIGH 0

DESIGN CFM = 770  
CFM @ .6" E.S.P.

TEMPERATURE RISE 47 °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	3	4	5	6	7	10	12	13	14	15	17	18	19	20	21	22	23
ROOM NAME	MBR	ENS	BED-2	BED-2	BED-3	BED-3	BATH	MBR	LV/DN	LV/DN	K/B/F	K/B/F	LAUN	PWD	FOY	MUD	BAS	BAS	BAS
RM LOSS MBH.	1.43	1.56	1.22	1.22	1.14	1.14	0.54	1.43	1.89	1.89	2.35	2.35	1.17	1.11	0.49	1.14	4.18	4.18	4.18
CFM PER RUN HEAT	32	35	27	27	25	25	12	32	42	42	52	52	26	25	11	25	93	93	93
RM GAIN MBH.	1.73	1.03	1.74	1.74	1.67	1.67	0.15	1.73	1.77	1.77	2.40	2.40	1.97	0.32	0.07	0.17	0.59	0.59	0.59
CFM PER RUN COOLING	55	33	56	56	53	53	5	55	56	56	77	77	63	10	2	5	19	19	19
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	0.16	0.16	0.16
ACTUAL DUCT LGH.	52	44	48	45	66	62	27	44	41	45	32	22	48	20	38	12	27	16	34
EQUIVALENT LENGTH	220	190	140	120	210	210	140	210	120	120	100	110	190	120	110	150	90	120	130
TOTAL EFFECTIVE LENGTH	272	234	188	165	276	272	167	254	161	165	132	132	238	140	148	162	117	136	164
ADJUSTED PRESSURE	0.06	0.07	0.09	0.1	0.06	0.06	0.1	0.07	0.1	0.1	0.13	0.13	0.07	0.12	0.11	0.1	0.13	0.12	0.1
ROUND DUCT SIZE	5	4	5	5	5	5	4	5	5	5	5	5	5	4	4	4	6	6	6
HEATING VELOCITY (ft/min)	235	402	198	198	184	184	138	235	308	308	382	382	191	287	126	287	474	474	474
COOLING VELOCITY (ft/min)	404	379	411	411	389	389	57	404	411	411	565	565	463	115	23	57	97	97	97
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10
TRUNK	C	C	C	C	B	B	C	C	B	B	A	A	B	C	B	C	A	A	B

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	MBR	1.43	32	1.73	55	0.17	52	220	272	0.06	5	235	404	3X10	C
2	ENS	1.56	35	1.03	33	0.17	44	190	234	0.07	4	402	379	3X10	C
3	BED-2	1.22	27	1.74	56	0.17	48	140	188	0.09	5	198	411	3X10	C
4	BED-2	1.22	27	1.74	56	0.17	45	120	165	0.1	5	198	411	3X10	C
5	BED-3	1.14	25	1.67	53	0.17	66	210	276	0.06	5	184	389	3X10	B
6	BED-3	1.14	25	1.67	53	0.17	62	210	272	0.06	5	184	389	3X10	B
7	BATH	0.54	12	0.15	5	0.17	27	140	167	0.1	4	138	57	3X10	C
10	MBR	1.43	32	1.73	55	0.17	44	210	254	0.07	5	235	404	3X10	C
12	LV/DN	1.89	42	1.77	56	0.17	41	120	161	0.1	5	308	411	3X10	B
13	LV/DN	1.89	42	1.77	56	0.17	45	120	165	0.1	5	308	411	3X10	B
14	K/B/F	2.35	52	2.40	77	0.17	32	100	132	0.13	5	382	565	3X10	A
15	K/B/F	2.35	52	2.40	77	0.17	22	110	132	0.13	5	382	565	3X10	A
17	LAUN	1.17	26	1.97	63	0.17	48	190	238	0.07	5	191	463	3X10	B
18	PWD	1.11	25	0.32	10	0.17	20	120	140	0.12	4	287	115	3X10	C
19	FOY	0.49	11	0.07	2	0.17	38	110	148	0.11	4	126	23	3X10	B
20	MUD	1.14	25	0.17	5	0.17	12	150	162	0.1	4	287	57	3X10	C
21	BAS	4.18	93	0.59	19	0.16	27	90	117	0.13	6	474	97	4X10	A
22	BAS	4.18	93	0.59	19	0.16	16	120	136	0.12	6	474	97	4X10	A
23	BAS	4.18	93	0.59	19	0.16	34	130	164	0.1	6	474	97	4X10	B

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	290	0.12	8	8	x	8	653	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.05	0	0	x	8	0	
TRUNK B	264	0.06	9.2	12	x	8	396	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.05	0	0	x	8	0	
TRUNK C	479	0.06	11.4	18	x	8	479	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	TRUNK W 0 0.05 0 0 x 8 0 TRUNK X 770 0.05 14.3 24 x 8 578 TRUNK Y 392 0.05 11.1 14 x 8 504 TRUNK Z 175 0.05 8.2 8 x 8 394 DROP 770 0.05 14.3 24 x 10 462
FLOOR	2	2	2	2	1	1										B	
AIR VOLUME	85	75	72	70	154	175	0	0	0	0	0	0	0	0	139		
PLENUM PRESSURE	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14		
ACTUAL DUCT LGH.	36	64	70	58	36	49	1	1	1	1	1	1	1	1	14		
EQUIVALENT LENGTH	155	205	245	260	155	160	0	0	0	0	0	0	0	0	135		
TOTAL EFFECTIVE LH	191	269	315	318	191	209	1	1	1	1	1	1	1	1	149		
ADJUSTED PRESSURE	0.07	0.05	0.05	0.05	0.07	0.07	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32	0.10		
ROUND DUCT SIZE	5.8	6	5.9	5.8	7	7.5	0	0	0	0	0	0	0	0	6.3		
INLET GRILL SIZE	8	8	8	8	8	8	0	0	0	0	0	0	0	0	8		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
INLET GRILL SIZE	14	14	14	14	14	14	0	0	0	0	0	0	0	0	14		

TRUNK W	0	0.05	0	0	x	8	0
TRUNK X	770	0.05	14.3	24	x	8	578
TRUNK Y	392	0.05	11.1	14	x	8	504
TRUNK Z	175	0.05	8.2	8	x	8	394
DROP	770	0.05	14.3	24	x	10	462

TYPE: 2504-END  
SITE NAME: SUMMER RIDGE ESTATES

LO # 105279

**RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY**

COMBUSTION APPLIANCES		9.32.3.1(1)
a)	<input checked="" type="checkbox"/> Direct vent (sealed combustion) only	
b)	<input type="checkbox"/> Positive venting induced draft (except fireplaces)	
c)	<input type="checkbox"/> Natural draft, B-vent or induced draft gas fireplace	
d)	<input type="checkbox"/> Solid Fuel (including fireplaces)	
e)	<input type="checkbox"/> No Combustion Appliances	

HEATING SYSTEM	
<input checked="" type="checkbox"/> Forced Air	<input type="checkbox"/> Non Forced Air
<input type="checkbox"/> Electric Space Heat	

HOUSE TYPE		9.32.1(2)
<input checked="" type="checkbox"/> I	Type a) or b) appliance only, no solid fuel	
<input type="checkbox"/> II	Type I except with solid fuel (including fireplaces)	
<input type="checkbox"/> III	Any Type c) appliance	
<input type="checkbox"/> IV	Type I, or II with electric space heat	
<input type="checkbox"/>	Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS		O.N.H.W.P.
<input type="checkbox"/> 1	Exhaust only/Forced Air System	
<input type="checkbox"/> 2	HRV with Ducting/Forced Air System	
<input checked="" type="checkbox"/> 3	HRV Simplified/connected to forced air system	
<input type="checkbox"/> 4	HRV with Ducting/non forced air system	
<input type="checkbox"/>	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>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Other Rooms	<u>2</u> @ 10.6 cfm	<u>21.2</u> cfm
Table 9.32.3.A.	TOTAL	<u>127.2</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>127.2</u>	cfm
Less Principal Ventil. Capacity	<u>63.6</u>	cfm
Required Supplemental Capacity	<u>63.6</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE V150H	Location: BSMT
<u>63.6</u> cfm	<input checked="" type="checkbox"/> HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	$\Delta T$ °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	<input checked="" type="checkbox"/>	3.5
BATH	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	3.5
PWD	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	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	<input checked="" type="checkbox"/> HVI Approved	
@ 32 deg F ( 0 deg C)		

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

BUILDER: ROYAL PINE 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:	June-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

*Michael O'Rourke*

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 105279	Model: 2504-END	Builder: ROYAL PINE HOMES	Date: 6/11/2024																																																									
<b>Volume Calculation</b>			<b>Air Change &amp; Delta T Data</b>																																																									
<b>House Volume</b> <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>914</td><td>9</td><td>8226</td></tr> <tr><td>First</td><td>914</td><td>10</td><td>9140</td></tr> <tr><td>Second</td><td>1113</td><td>9</td><td>10017</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="3" style="text-align: right;">Total:</td><td>27,383.0 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>775.4 m³</td></tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	914	9	8226	First	914	10	9140	Second	1113	9	10017	Third	0	9	0	Fourth	0	9	0	Total:			27,383.0 ft³	Total:			775.4 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%; text-align: center;">0.298</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.097</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse;"> <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> <tr> <td>Winter DTDh</td> <td style="text-align: center;">22</td> <td style="text-align: center;">-19</td> <td style="text-align: center;">41</td> <td style="text-align: center;">74</td> </tr> <tr> <td>Summer DTDc</td> <td style="text-align: center;">24</td> <td style="text-align: center;">30</td> <td style="text-align: center;">6</td> <td style="text-align: center;">11</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.298	SUMMER NATURAL AIR CHANGE RATE	0.097	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-19	41	74	Summer DTDc	24	30	6	11
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<b>5.2.3.1 Heat Loss due to Air Leakage</b>			<b>6.2.6 Sensible Gain due to Air Leakage</b>																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ <p>0.298      x      215.39      x      41 °C      x      1.2      =      3172 W</p> <p style="text-align: right;">=      10822 Btu/h</p>			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ <p>0.097      x      215.39      x      6 °C      x      1.2      =      153 W</p> <p style="text-align: right;">=      522 Btu/h</p>																																																									
<b>5.2.3.2 Heat Loss due to Mechanical Ventilation</b>			<b>6.2.7 Sensible heat Gain due to Ventilation</b>																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>64 CFM      x      74 °F      x      1.08      x      0.25      =      1274 Btu/h</p>			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>64 CFM      x      11 °F      x      1.08      x      0.25      =      189 Btu/h</p>																																																									
<b>5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)</b>																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																												
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL <sub>clevel</sub> )	Air Leakage Heat Loss Multiplier (LF x HLairbv / HL <sub>clevel</sub> )																																																								
1	0.5	10,822	7,116	0.760																																																								
2	0.3		7,974	0.407																																																								
3	0.2		8,421	0.257																																																								
4	0		0	0.000																																																								
5	0		0	0.000																																																								
<p>*HLairbv = Air leakage heat loss + ventilation heat loss</p> <p>*For a balanced or supply only ventilation system HLairve = 0</p>																																																												
				Michael O'Rourke BCIN# 19669 																																																								

**HEAT LOSS AND GAIN SUMMARY SHEET**

<b>MODEL:</b> 2504-END	<b>BUILDER:</b> ROYAL PINE HOMES
<b>SFQT:</b> 2027	<b>SITE:</b> SUMMER RIDGE ESTATES
<b>LO#</b> 105279	

**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:	DETACHED	# 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 <sup>3</sup> ):	27383.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft <sup>2</sup> ):	2.00	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 51.0 ft	WIDTH: 23.0 ft	EXPOSED PERIMETER:	148.0 ft

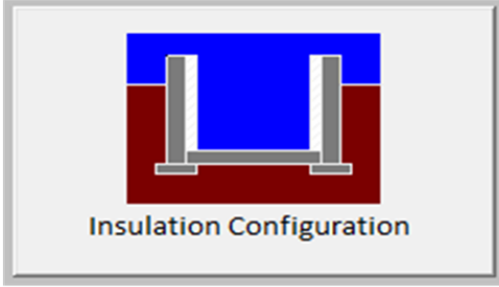
2012 OBC - COMPLIANCE PACKAGE		Compliance Package PERFORMANCE	
Component		Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value		60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value		31	27.65
Exposed Floor Minimum RSI (R)-Value		31	29.80
Walls Above Grade Minimum RSI (R)-Value		22+1.5	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	
Floor Width (m):	7.0	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m <sup>2</sup> ):	0.8	
Door Area (m <sup>2</sup> ):	0.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1474

TYPE: 2504-END

LO# 105279

# Air Infiltration Residential Load Calculator

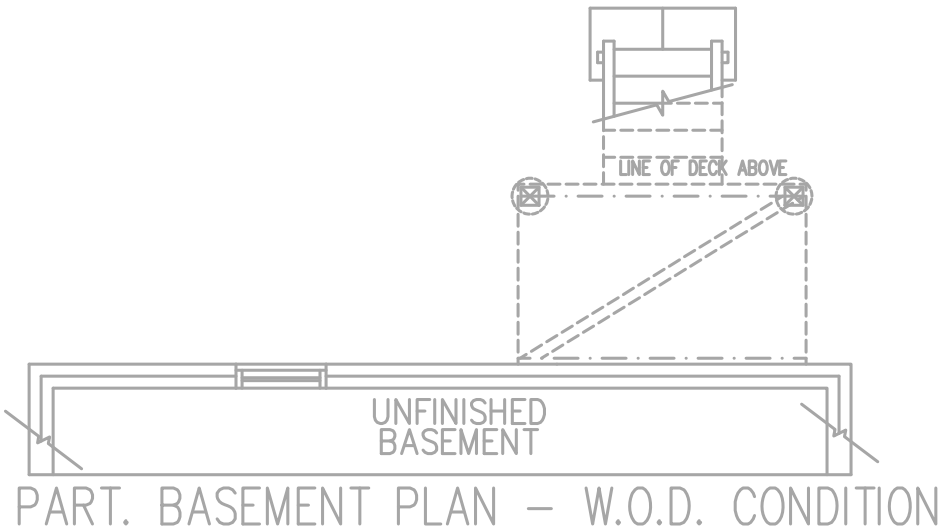
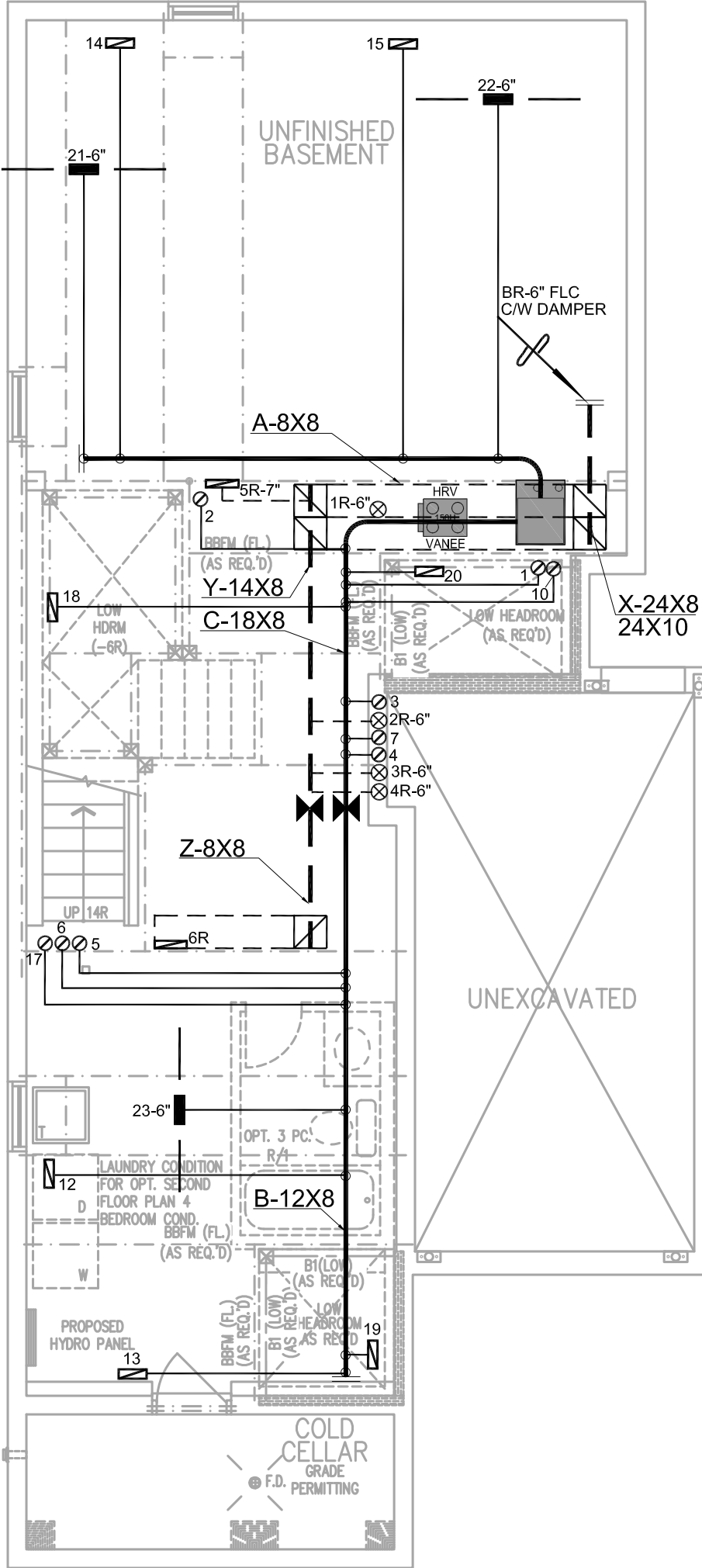
Supplemental tool for CAN/CSA-F280

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):	7.62			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m <sup>3</sup> ):	775.4			
Air Leakage/Ventilation				
Air Tightness Type:	Attached (3.0 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	868.6 cm <sup>2</sup>		
	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):	0.298			
Cooling Air Leakage Rate (ACH/H):	0.097			

TYPE: 2504-END

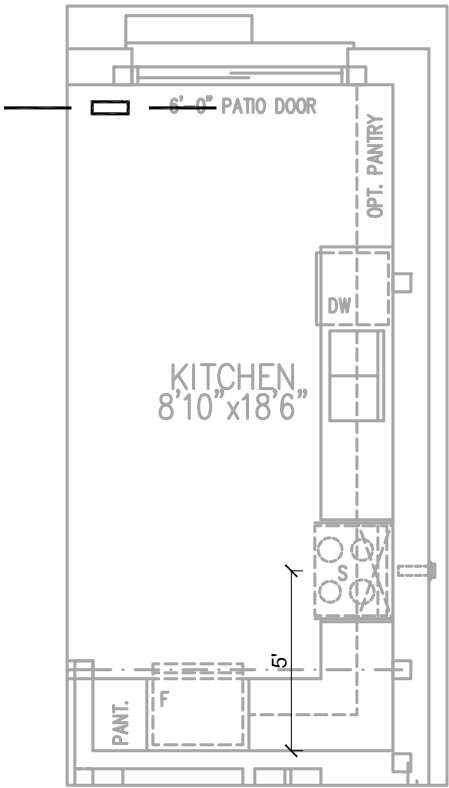
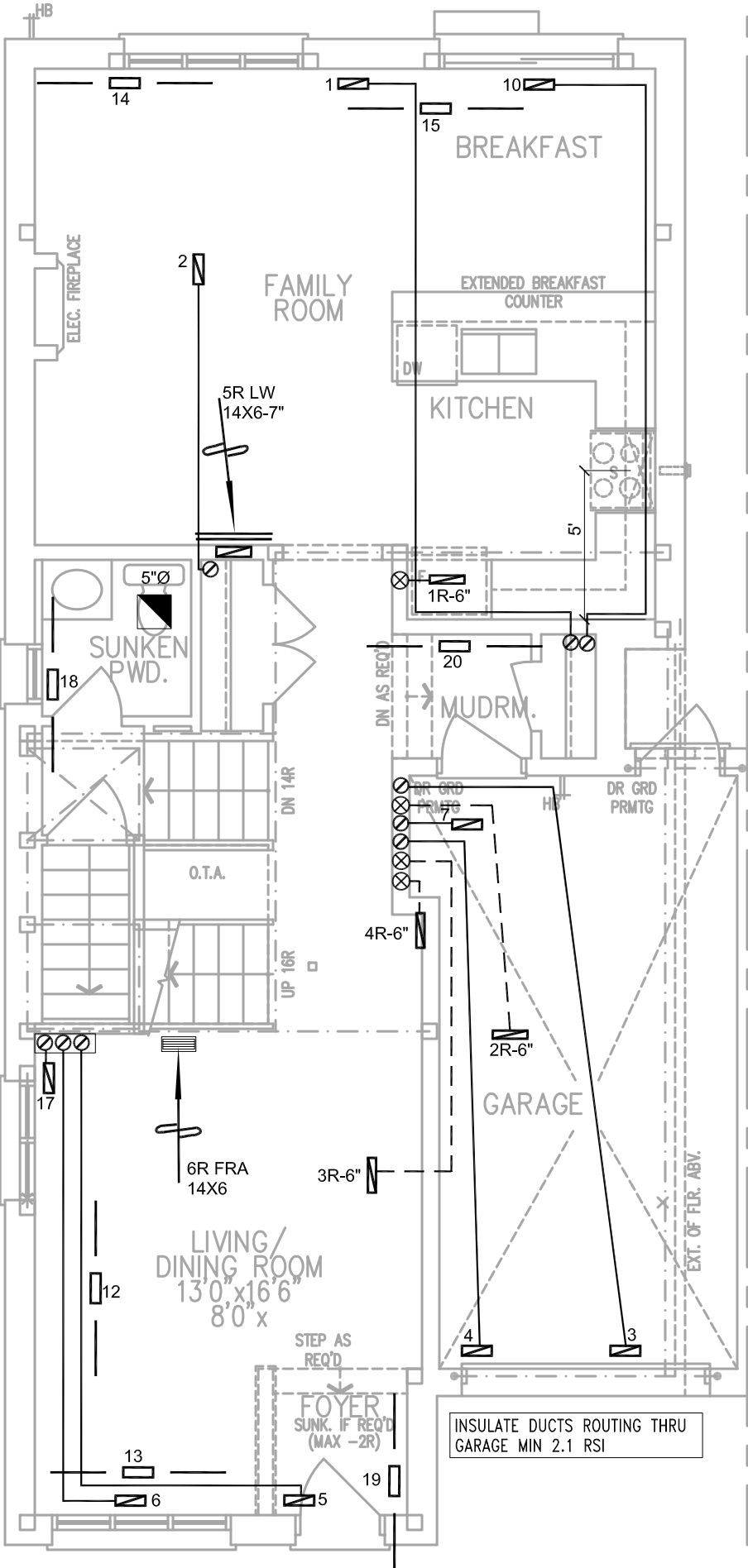
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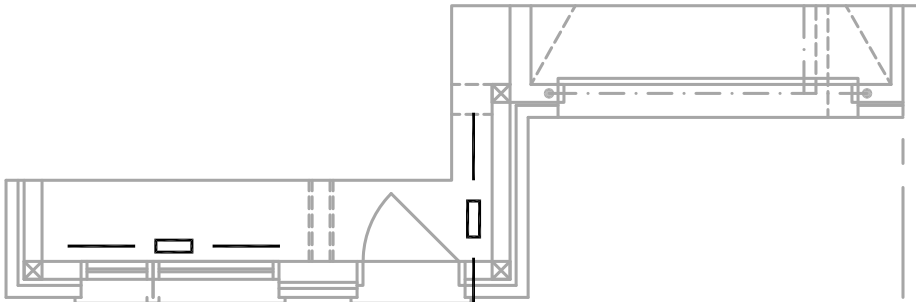
BASEMENT PLAN ELEV 'A' & 'B'

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.		SB-12 PERFORMANCE				
Client		<div></div> <div>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</div> <div>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.</div>				HEAT LOSS 35879 BTU/H		# OF RUNS S/A R/A FANS		Sheet Title				
ROYAL PINE HOMES						UNIT DATA		3RD FLOOR				BASEMENT HEATING LAYOUT		
						MAKE CARRIER		2ND FLOOR		9	4		3	
						MODEL 59SC6A040M14--10		1ST FLOOR		7	2		2	
						INPUT 40 MBTU/H		BASEMENT		3	1	0	Date JUNE/2024	
						OUTPUT 39 MBTU/H		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						Scale 3/16" = 1'-0"
						COOLING 2.0 TONS								BCIN# 19669
						FAN SPEED 770 cfm @ 0.6" w.c.								LO# 105279
2504-END						2027 sqft								



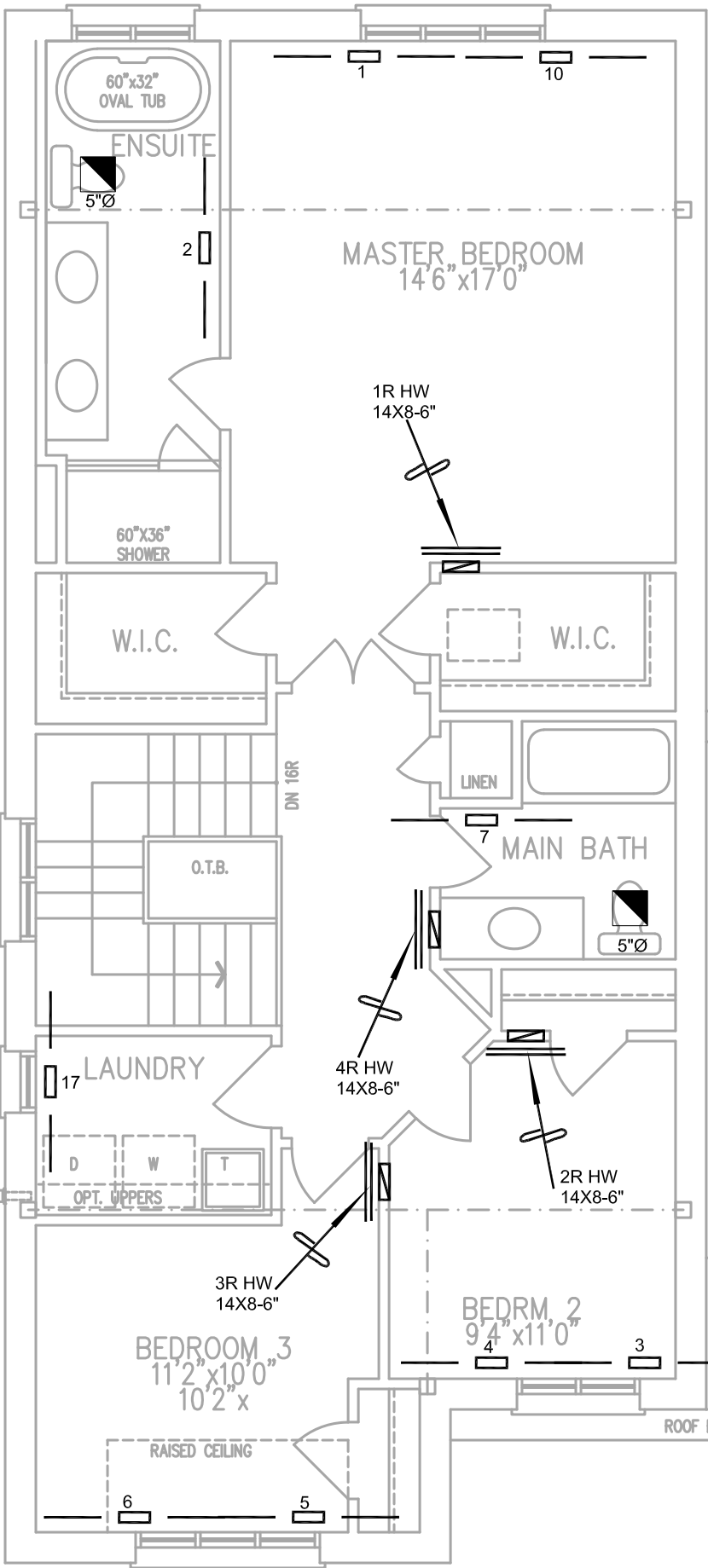
PARTIAL GROUND FLOOR PLAN ELEV 'A'  
(W/ OPT. KITCHEN LAYOUT)  
(ELEV. 'B' SIMILAR)

GROUND FLOOR PLAN ELEV 'A'

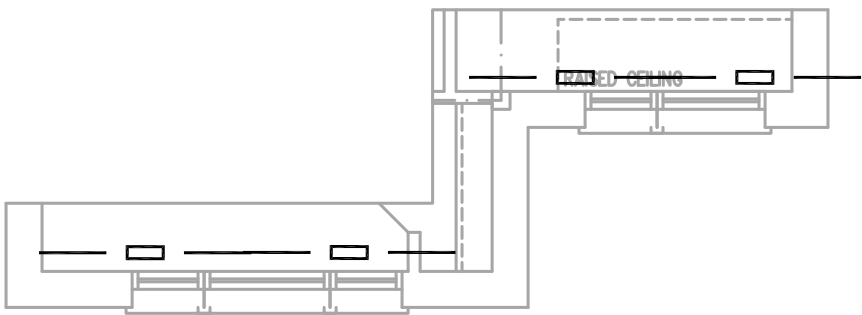


PARTIAL GROUND FLOOR PLAN,  
ELEV 'B' (REV)

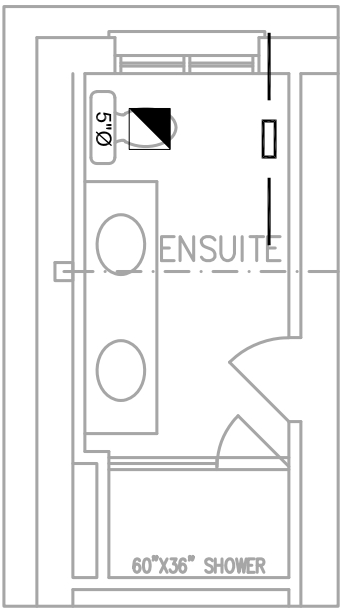
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
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Client ROYAL PINE HOMES		 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 FIRST FLOOR HEATING LAYOUT				
Project Name SUMMER RIDGE ESTATES BRAMPTON, ONTARIO										
2504-END		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.				Date JUNE/2024				
2027 sqft						Scale 3/16" = 1'-0"				
						BCIN# 19669				
						LO#			105279	



SECOND FLR PLAN ELEV 'A1' (REV)



PARTIAL SECOND FLR PLAN, ELEV 'B'



PARTIAL SECOND FLR PLAN ELEV 'A1' (REV) OPT. ENSUITE LAYOUT (ELEV. 'B1' REV. & 'B2' SIMILAR)

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		
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Client		<div> 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</div>				<div>Sheet Title SECOND FLOOR HEATING LAYOUT</div> <div>Date JUNE/2024</div> <div>Scale 3/16" = 1'-0"</div> <div>BCIN# 19669</div> <div>LO# 105279</div>				
Project Name										
SUMMER RIDGE ESTATES BRAMPTON, ONTARIO										
2504-END										
2027 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.								