

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: 2005 FIN BSMT Project: SUMMER RIDGE ESTATES		
D. Declaration of Designer				
I, <u>MICHAEL O'ROURKE</u> declare that (choose one as appropriate): (print name)				
☐ 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.				
April 24, 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										FIN BSMT										DATE: Apr-24										WINTER NATURAL AIR CHANGE RATE 0.282										HEAT LOSS ΔT °F. 74										CSA-F280-12																			
BUILDER: ROYAL PIE HOMES										TYPE: 2005										GFA: 1971										LO# 104861										SUMMER NATURAL AIR CHANGE RATE 0.088										HEAT GAIN ΔT °F. 11										PERFORMANCE									
ROOM USE				MBR		ENS		WIC		BED-2		BED-3				BATH										B-BED4		B-BED5																																									
EXP. WALL				42		20		5		10		26				0										10		24																																									
CLG. HT.				9		9		9		9		11				9										9		9																																									
FACTORS																																																																					
GRS.WALL AREA		LOSS GAIN		378		180		45		90		286				0										60		144																																									
GLAZING				LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN				LOSS GAIN										LOSS GAIN		LOSS GAIN																																									
NORTH		20.8	12.2	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																																								
EAST		20.8	30.4	0	0	0	0	0	0	0	0	26	540	791	35	727	1065	0	0	0	0	0	0	0	0	0	0	0	0																																								
SOUTH		20.8	18.7	86	1787	1609	23	478	430	14	291	262	0	0	0	35	727	655	0	0	0	0	0	0	10	208	304	0	0																																								
WEST		20.8	30.4	23	478	700	0	0	0	0	0	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	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	0	0																																								
NET EXPOSED WALL		3.5	0.5	269	933	138	157	544	81	31	107	16	64	222	33	216	749	111	0	0	0	0	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	30	105	16	72	253																																								
EXPOSED CLG		1.3	0.6	313	392	174	108	135	60	50	63	28	225	282	125	116	145	65	83	104	46	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	102	274	122	0	0	0	0	0	0	0	0	0	0	0																																								
EXPOSED FLOOR		2.5	0.4	0	0	0	4	10	1	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						520		520																																											
SLAB ON GRADE HEAT LOSS				0		0		0		0		0		0		0		0						0		0		0																																									
SUBTOTAL HT LOSS				3589		1167		461		1044		2622		104										833		981																																											
SUB TOTAL HT GAIN				2622		573		306		949		2017		46										320		225																																											
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	0.20		0.23	0.50		0.96	0.50		0.96																																													
AIR CHANGE HEAT LOSS				834		271		107		242		609		24										802		944																																											
AIR CHANGE HEAT GAIN				154		34		18		56		119		3										19		13																																											
DUCT LOSS				0		144		0		0		0		0										0		0																																											
DUCT GAIN				0		61		0		0		0		0										0		0																																											
HEAT GAIN PEOPLE		240	2	480	0	0	0	0	0	1	240	1	240	0	240	0	0	0	0	0	0	0	0	1	240	1	240	0	0																																								
HEAT GAIN APPLIANCES/LIGHTS				379		0		0		379		379		0										379		379																																											
TOTAL HT LOSS BTU/H				4423		1583		568		1286		3231		128										1635		1925																																											
TOTAL HT GAIN x 1.3 BTU/H				4725		867		421		2111		3581		64										1245		1114																																											

ROOM USE			LV/DN				K/B/F				ENTRY-1				FOY		ENTRY-2		B-BTH		REC				BAS	
EXP. WALL			36				42				0				5		20		0		45				23	
CLG. HT.			10				10				10				10		11		9		9				9	
GRS.WALL AREA	LOSS	GAIN	360				420				0				50		220		0		270				138	
GLAZING			LOSS		GAIN		LOSS		GAIN		LOSS		GAIN		LOSS		GAIN		LOSS		GAIN		LOSS		GAIN	
NORTH	20.8	12.2	0	0	0		0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0
EAST	20.8	30.4	74	1537	2252		0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	20.8	18.7	37	769	692		38	789	711		0	0	0		13	270	243	6	125	112	0	0	0	0	0	0
WEST	20.8	30.4	0	0	0		31	644	943		0	0	0		0	0	0	0	0	0	0	10	208	304	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
DOORS	19.6	2.9	0	0	0		0	0	0		0	0	0		20	392	58	40	783	116	0	0	0	20	392	58
NET EXPOSED WALL	3.5	0.5	249	863	128		351	1217	180		0	0	0		17	59	9	174	603	89	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	135	474	70	69	242
EXPOSED CLG	1.3	0.6	0	0	0		0	0	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
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
BASEMENT/CRAWL HEAT LOSS			0				0				0				0		0		185		1359				748	
SLAB ON GRADE HEAT LOSS			0				0				0				0		0		0		0				0	
SUBTOTAL HT LOSS			3169				2651				0				721		1511		185		2432				991	
SUB TOTAL HT GAIN					3072				1835				0		310		318		0		433				36	
LEVEL FACTOR / MULTIPLIER			0.30	0.39			0.30	0.39			0.30	0.39			0.30	0.39	0.30		0.96	0.50	0.96			0.50	0.96	
AIR CHANGE HEAT LOSS			1233				1031				0				280		588		178		2342				954	
AIR CHANGE HEAT GAIN					181				108				0		18		19		0		25				2	
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	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS			379				379				0				0		379		0		379				379	
TOTAL HT LOSS BTU/H			4402				3681				0				1001		2099		362		4774				1944	
TOTAL HT GAIN x1.3 BTU/H			4721				3018				0				427		930		0		1088				542	

SITE NAME: SUMMER RIDGE ESTATES
BUILDER: ROYAL PIE HOMES

FIN BSMT
TYPE: 2005

DATE: Apr-24

GFA: 1971 LO# 104861

HEATING CFM 770 COOLING CFM 770
TOTAL HEAT LOSS 33,044 TOTAL HEAT GAIN 24,852
AIR FLOW RATE CFM 23.3 AIR FLOW RATE CFM 30.98

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	8	7
R/A	0	0	4	2	3

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

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

plenium pressure s/a 0.18
max s/a dif press. loss 0.01
min adjusted pressure s/a 0.17
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

RUN #	1	2	3	4	5	6	7	8	10	11	12	13	14	15	16	17	19	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-3	BATH	BED-2	MBR	LV/DN	LV/DN	LV/DN	K/B/F	K/B/F	ENTRY-1	ENTRY-2	FOY	BAS	BAS	REC	REC
RM LOSS MBH.	2.21	1.58	0.57	0.64	1.62	1.62	0.13	0.64	2.21	1.47	1.47	1.47	1.84	1.84	0.00	2.10	1.00	0.97	0.97	2.39	2.39
CFM PER RUN HEAT	52	37	13	15	38	38	3	15	52	34	34	34	43	43	0	49	23	23	23	56	56
RM GAIN MBH.	2.36	0.87	0.42	1.06	1.79	1.79	0.06	1.06	2.36	1.57	1.57	1.57	1.51	1.51	0.00	0.93	0.43	0.27	0.27	0.54	0.54
CFM PER RUN COOLING	73	27	13	33	55	55	2	33	73	49	49	49	47	47	0	29	13	8	8	17	17
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
ACTUAL DUCT LGH.	55	44	32	30	27	48	14	42	42	30	33	24	33	31	30	37	20	26	7	26	35
EQUIVALENT LENGTH	160	110	120	180	140	170	170	180	150	120	140	100	130	110	140	120	110	100	130	180	140
TOTAL EFFECTIVE LENGTH	215	154	152	210	167	218	184	222	192	150	173	124	163	141	170	157	130	126	137	206	175
ADJUSTED PRESSURE	0.08	0.11	0.11	0.08	0.1	0.08	0.09	0.08	0.09	0.11	0.1	0.13	0.1	0.12	0.1	0.11	0.13	0.13	0.12	0.08	0.1
ROUND DUCT SIZE	6	4	4	4	5	5	4	4	6	4	4	4	4	4	4	4	4	4	4	5	5
HEATING VELOCITY (ft/min)	265	424	149	172	279	279	34	172	265	390	390	390	493	493	0	562	264	264	264	411	411
COOLING VELOCITY (ft/min)	372	310	149	379	404	404	23	379	372	562	562	562	539	539	0	333	149	92	92	125	125
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	A	D	D	D	C	D	C	B	C	C	C	A	B	A	A	D	A	B	A	D

RUN #	25	26	27
ROOM NAME	B-BED4	B-BED5	B-BTH
RM LOSS MBH.	1.64	1.92	0.36
CFM PER RUN HEAT	38	45	8
RM GAIN MBH.	1.24	1.11	0.00
CFM PER RUN COOLING	39	35	0
ADJUSTED PRESSURE	0.17	0.17	0.17
ACTUAL DUCT LGH.	33	38	10
EQUIVALENT LENGTH	140	140	120
TOTAL EFFECTIVE LENGTH	173	178	130
ADJUSTED PRESSURE	0.1	0.09	0.13
ROUND DUCT SIZE	4	4	4
HEATING VELOCITY (ft/min)	436	516	92
COOLING VELOCITY (ft/min)	447	402	0
OUTLET GRILL SIZE	3X10	3X10	3X10
TRUNK	C	C	D

SUPPLY AIR TRUNK SIZE										RETURN AIR TRUNK SIZE									
TRUNK	STATIC	ROUND	RECT	VELOCITY		TRUNK	STATIC	ROUND	RECT	VELOCITY		TRUNK	STATIC	ROUND	RECT	VELOCITY		TRUNK	STATIC
CFM	PRESS.	DUCT	DUCT	(ft/min)		CFM	PRESS.	DUCT	DUCT	(ft/min)		CFM	PRESS.	DUCT	DUCT	(ft/min)		CFM	PRESS.
TRUNK A	260	0.08	8.5	8	x	8	585	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.05	0
TRUNK B	378	0.08	9.7	12	x	8	567	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.05	0
TRUNK C	238	0.08	8.2	8	x	8	536	TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.05	0
TRUNK D	394	0.08	9.9	12	x	8	591	TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.05	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
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
																TRUNK U	0	0.05	0
																TRUNK V	0	0.05	0
																TRUNK W	0	0.05	0
																TRUNK X	770	0.05	14.3
																TRUNK Y	450	0.05	11.7
																TRUNK Z	205	0.05	8.7
																DROP	770	0.05	14.3

RETURN AIR #	1	2	3	4	5	6	7	8	BR
FLOOR	2	2	2	2	1	1	B	B	B
AIR VOLUME	105	85	85	75	135	170	35	35	0
PLENUM PRESSURE	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
ACTUAL DUCT LGH.	38	42	42	37	21	22	38	43	1
EQUIVALENT LENGTH	215	185	225	245	240	190	200	195	0
TOTAL EFFECTIVE LH	253	227	267	282	261	212	238	238	1
ADJUSTED PRESSURE	0.06	0.06	0.05	0.05	0.05	0.07	0.06	0.06	14.32
ROUND DUCT SIZE	6.5	6	6	6	7.5	7.5	4.3	4.3	0
INLET GRILL SIZE	8	8	8	8	8	8	8	8	0
	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	14	14	14	0

TYPE: 2005
SITE NAME: SUMMER RIDGE ESTATES

LO # 104861
FIN BSMT

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>1</u> @ 21.2 cfm	<u>21.2</u> cfm
Other Bedrooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Kitchen & Bathrooms	<u>5</u> @ 10.6 cfm	<u>53</u> cfm
Other Rooms	<u>6</u> @ 10.6 cfm	<u>63.6</u> cfm
Table 9.32.3.A.	TOTAL	<u>180.2</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>95.4</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>180.2</u>	cfm
Less Principal Ventil. Capacity	<u>95.4</u>	cfm
Required Supplemental Capacity	<u>84.8</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE V150H	Location: BSMT
<u>95.4</u> cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
95.4 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

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:	April-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#: 104861		Model: 2005		Builder: ROYAL PIE HOMES																																																									
				Date: 2024-04-24																																																									
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>993</td> <td>9</td> <td>8937</td> </tr> <tr> <td>First</td> <td>993</td> <td>10</td> <td>9930</td> </tr> <tr> <td>Second</td> <td>997</td> <td>9</td> <td>8973</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>27,840.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>788.3 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	993	9	8937	First	993	10	9930	Second	997	9	8973	Third	0	9	0	Fourth	0	9	0	Total:			27,840.0 ft³	Total:			788.3 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 30%;">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;"> <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>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> </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
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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 218.98 x 41 °C x 1.2 = 3059 W = 10438 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.088 x 218.98 x 6 °C x 1.2 = 142 W = 485 Btu/h																																																										
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																										
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 95 CFM x 74 °F x 1.08 x 0.25 = 1911 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 95 CFM x 11 °F x 1.08 x 0.25 = 283 Btu/h																																																										
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																													
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																													
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 / HLlevel)																																																									
1	0.5	10,438	5,421	0.963																																																									
2	0.3		8,052	0.389																																																									
3	0.2		8,988	0.232																																																									
4	0		0	0.000																																																									
5	0		0	0.000																																																									
*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0																																																													
				Michael O'Rourke BCIN# 19669																																																									

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 2005	FIN BSMT	BUILDER: ROYAL PIE HOMES
SFQT: 1971	LO# 104861	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	0.56

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):	27840.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 54.0 ft	WIDTH: 22.0 ft	EXPOSED PERIMETER:	102.0 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	-

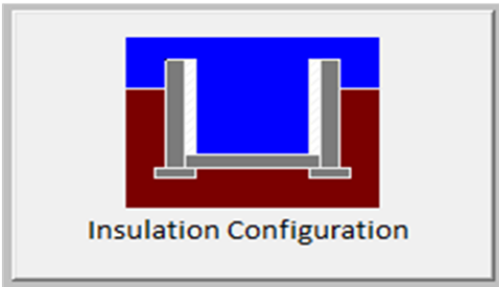
INDIVIDUAL BCIN: 19669

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):	16.5	 Insulation Configuration
Floor Width (m):	6.7	
Exposed Perimeter (m):	31.1	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	2.8	
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):		976

TYPE: 2005
LO# 104861

FIN BSMT

Michael O'Rourke BCIN #19669



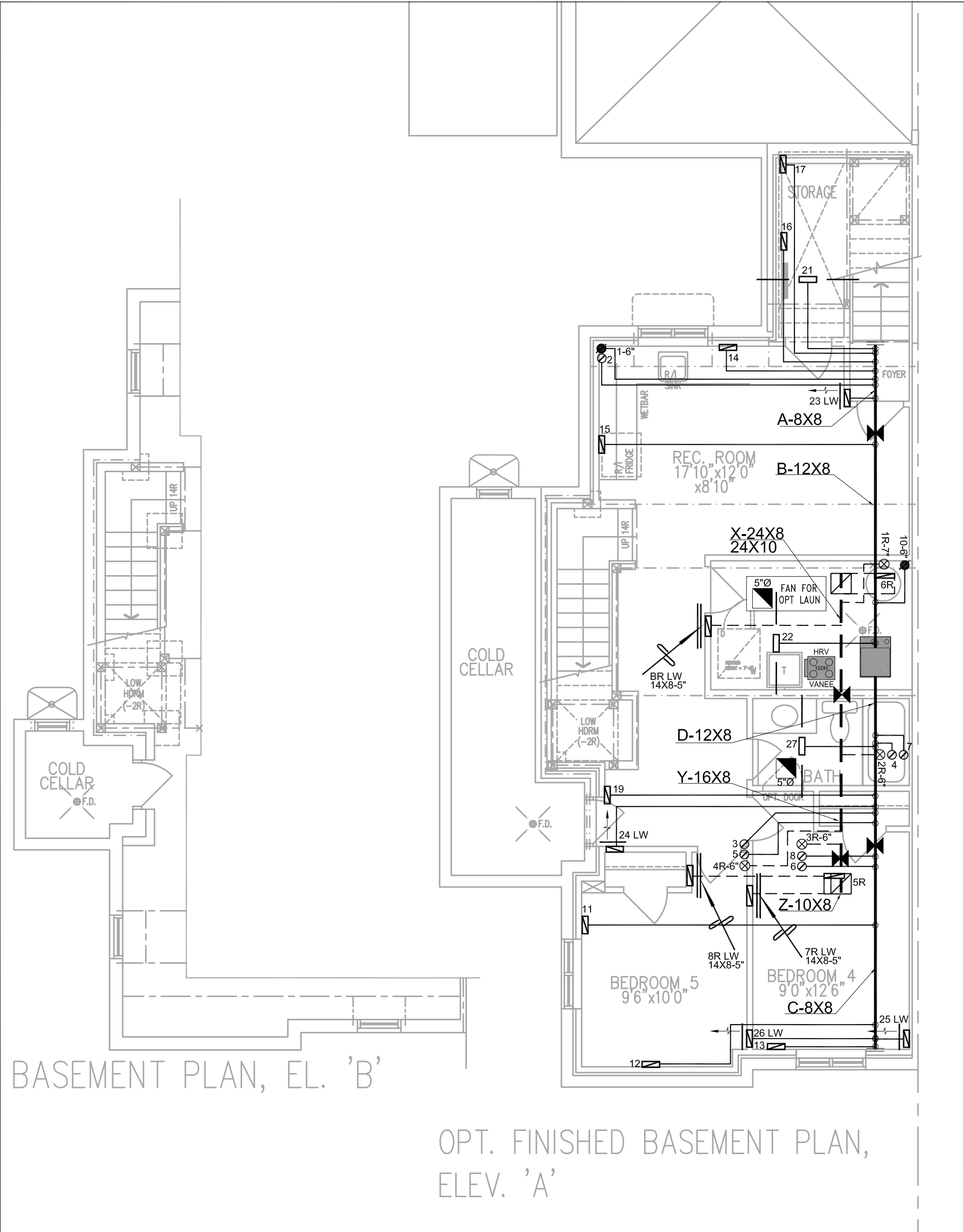
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

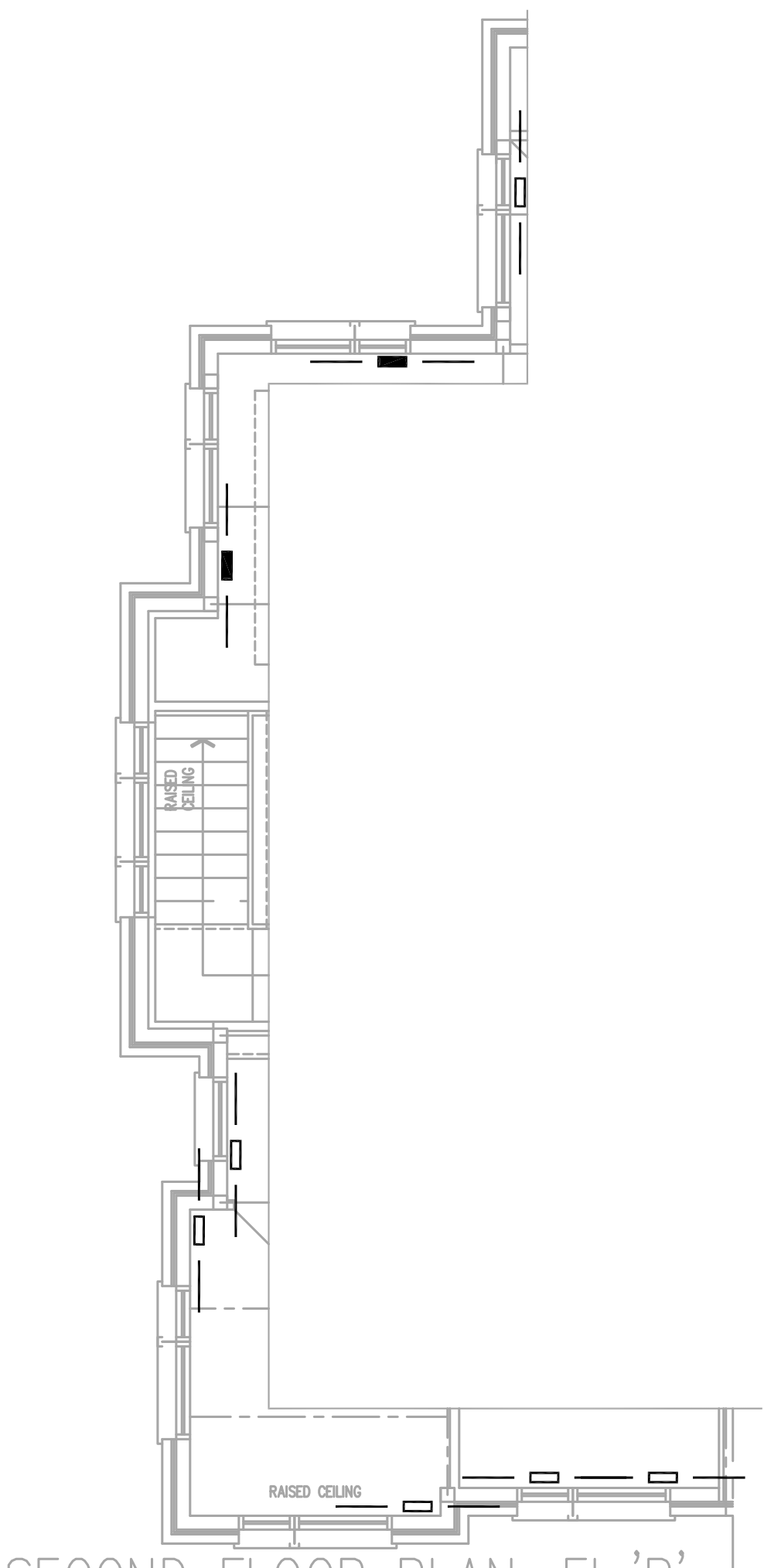
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.71			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	788.3			
Air Leakage/Ventilation				
Air Tightness Type:	Attached (3.0 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	883.1 cm ²		
	3.00	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	45.0	45.0		
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: 2005
LO# 104861

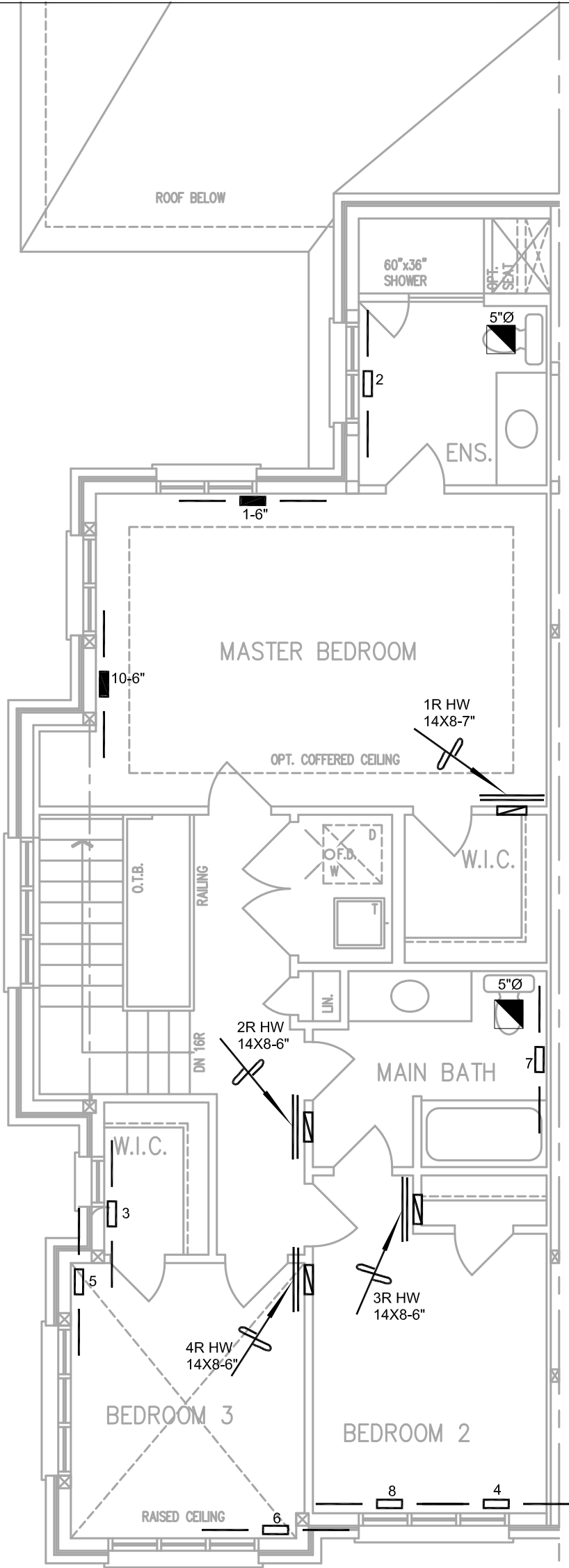
FIN BSMT



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 34955 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		9 4 2	
SUMMER RIDGE ESTATES						MODEL 59SC6A040M14--10		1ST FLOOR		8 2 2	
BRAMPTON, ONTARIO						INPUT 40 MBTU/H		BASEMENT		7 3 1(2)	
2005 - FIN BSMT 1971 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.				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		Date APR/2024	
						COOLING 2.0 TONS				Scale 3/16" = 1'-0"	
						FAN SPEED 770 cfm @ 0.6" w.c.				BCIN# 19669	
										LO#	104861



SECOND FLOOR PLAN, EL.'B'



SECOND FLOOR PLAN, EL. 'A'

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.				
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Project Name										SECOND FLOOR HEATING LAYOUT		
SUMMER RIDGE ESTATES BRAMPTON, ONTARIO										Date	APR/2024	
										Scale	3/16" = 1'-0"	
2005 - FIN BSMT 1971 sqft						BCIN# 19669						
						LO#	104861					