


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]				
<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: 2503 Project: SUMMER RIDGE ESTATES		
D. Declaration of Designer				
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 10, 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				DATE: Jun-24				WINTER NATURAL AIR CHANGE RATE 0.308				HEAT LOSS AT °F. 74				CSA-F280-12			
BUILDER: ROYAL PINE HOMES				TYPE: 2503				GFA: 2049				LO# 105277				SUMMER NATURAL AIR CHANGE RATE 0.097			
ROOM USE				MBR				ENS				BED-2				BED-3			
EXP. WALL				39				7				25				14			
CLG. HT.				9				9				9				9			
FACTORS																			
GRS.WALL AREA				351				63				225				126			
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				0 0 0				26 540 856				47 986 1563			
SOUTH				20.8 19.8				0 0 0				0 0 0				0 0 0			
WEST				20.8 32.9				35 720 1141				0 0 0				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				316 1097 163				46 158 23				199 690 102			
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				378 474 211				130 163 72				155 194 86			
NO ATTIC EXPOSED CLG				2.7 1.2				0 0 0				0 0 0				140 175 78			
EXPOSED FLOOR				2.5 0.4				0 0 0				25 67 30				50 134 60			
BASEMENT/CRAWL HEAT LOSS												150 373 55				0 0 0			
SLAB ON GRADE HEAT LOSS												0				0			
SUBTOTAL HT LOSS								2291				1865				1568			
SUB TOTAL HT GAIN								1514				1130				1741			
LEVEL FACTOR / MULTIPLIER				0.20 0.31				0.20 0.31				0.20 0.31				0.20 0.31			
AIR CHANGE HEAT LOSS								719				585				492			
AIR CHANGE HEAT GAIN								109				82				126			
DUCT LOSS								0				245				0			
DUCT GAIN								0				230				0			
HEAT GAIN PEOPLE				240				2				1				1			
HEAT GAIN APPLIANCES/LIGHTS								480 0				240 240				240 240			
TOTAL HT LOSS BTU/H								847 0				847 847				847 847			
TOTAL HT GAIN x 1.3 BTU/H								3009				2695				2060			
								3835				3286				3839			

ROOM USE			LV/DN			K/B/F			LAUN			FOY			MUD			WOD			BAS		
EXP. WALL			29			45			0			10			12			28			98		
CLG. HT.			10			10			9			11			10			9			9		
FACTORS																							
GRS.WALL AREA			290			450			0			110			120			252			672		
LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN		
GLAZING																							
NORTH			20.8	12.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
EAST			20.8	32.9	34	706	1119	0	0	0	0	0	0	3	62	99	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	
WEST			20.8	32.9	0	0	0	73	1517	2403	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	
DOORS			19.6	2.9	0	0	0	0	0	0	0	0	0	20	392	58	20	392	58	0	0	0	
NET EXPOSED WALL			3.5	0.5	256	888	132	377	1307	194	0	0	0	87	302	45	100	347	51	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	161	566	84	
EXPOSED CLG			1.3	0.6	0	0	0	0	0	0	60	75	33	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	
EXPOSED FLOOR			2.5	0.4	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						
SLAB ON GRADE HEAT LOSS					0			0			0			0			0			0			
SUBTOTAL HT LOSS					1594			2824			75			756			738			711			
SUB TOTAL HT GAIN						1251			2596		33		202		109				314		167		
LEVEL FACTOR / MULTIPLIER			0.30	0.57			0.30	0.57		0.20	0.31		0.30	0.57		0.30	0.57			0.50	1.10		
AIR CHANGE HEAT LOSS					913			1617		24			433			423					5642		
AIR CHANGE HEAT GAIN						90			187		2		15		8						35		
DUCT LOSS					0			0		10			0		0						0		
DUCT GAIN						0		0			88		0		0		0				0		
HEAT GAIN PEOPLE			240		0		0	0	0	0	0		0	0	0	0	0	0	0	0	0		
HEAT GAIN APPLIANCES/LIGHTS						847			847		847		0		0		0		0		847		
TOTAL HT LOSS BTU/H					2507			4441		109			1188		1161				711		10050		
TOTAL HT GAIN x1.3 BTU/H					2844			4720		1262			281		153				409		1363		

SITE NAME: SUMMER RIDGE ESTATES
BUILDER: ROYAL PINE HOMES

TYPE: 2503

DATE: Jun-24

GFA: 2049

LO# 105277

HEATING CFM 770 COOLING CFM 770
TOTAL HEAT LOSS 29,854 TOTAL HEAT GAIN 23,146
AIR FLOW RATE CFM 25.79 AIR FLOW RATE CFM 33.27

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	5	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	13	14	15	17	19	20	21	22	23
ROOM NAME	MBR	ENS	BED-2	BED-2	BED-3	BED-3	BATH	MBR	LV/DN	K/B/F	K/B/F	LAUN	FOY	MUD	BAS	BAS	BAS
RM LOSS MBH.	1.50	0.90	1.35	1.35	1.03	1.03	1.03	1.50	2.51	2.22	2.22	0.11	1.19	1.16	3.59	3.59	3.59
CFM PER RUN HEAT	39	23	35	35	27	27	27	39	65	57	57	3	31	30	93	93	93
RM GAIN MBH.	1.92	0.93	1.64	1.64	1.92	1.92	0.23	1.92	2.84	2.36	2.36	1.26	0.28	0.15	0.59	0.59	0.59
CFM PER RUN COOLING	64	31	55	55	64	64	8	64	95	79	79	42	9	5	20	20	20
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16
ACTUAL DUCT LGH.	44	49	53	57	63	70	36	35	49	26	18	46	40	17	17	20	45
EQUIVALENT LENGTH	130	200	120	130	150	170	150	190	120	110	120	130	120	150	130	100	140
TOTAL EFFECTIVE LENGTH	174	249	173	187	213	240	186	225	169	136	138	176	160	167	147	120	185
ADJUSTED PRESSURE	0.1	0.07	0.1	0.09	0.08	0.07	0.09	0.07	0.09	0.12	0.12	0.09	0.1	0.1	0.11	0.13	0.08
ROUND DUCT SIZE	5	4	5	5	5	5	4	5	6	5	5	4	4	4	6	6	6
HEATING VELOCITY (ft/min)	286	264	257	257	198	198	310	286	331	419	419	34	356	344	474	474	474
COOLING VELOCITY (ft/min)	470	356	404	404	470	470	92	470	484	580	580	482	103	57	102	102	102
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10
TRUNK	A	A	C	C	B	B	C	A	B	A	A	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	1.50	39	1.92	64	0.17	44	130	174	0.1	5	286	470	3X10	A
2	ENS	0.90	23	0.93	31	0.17	49	200	249	0.07	4	264	356	3X10	A
3	BED-2	1.35	35	1.64	55	0.17	53	120	173	0.1	5	257	404	3X10	C
4	BED-2	1.35	35	1.64	55	0.17	57	130	187	0.09	5	257	404	3X10	C
5	BED-3	1.03	27	1.92	64	0.17	63	150	213	0.08	5	198	470	3X10	B
6	BED-3	1.03	27	1.92	64	0.17	70	170	240	0.07	5	198	470	3X10	B
7	BATH	1.03	27	0.23	8	0.17	36	150	186	0.09	4	310	92	3X10	C
10	MBR	1.50	39	1.92	64	0.17	35	190	225	0.07	5	286	470	3X10	A
13	LV/DN	2.51	65	2.84	95	0.16	49	120	169	0.09	6	331	484	4X10	B
14	K/B/F	2.22	57	2.36	79	0.17	26	110	136	0.12	5	419	580	3X10	A
15	K/B/F	2.22	57	2.36	79	0.17	18	120	138	0.12	5	419	580	3X10	A
17	LAUN	0.11	3	1.26	42	0.17	46	130	176	0.09	4	34	482	3X10	C
19	FOY	1.19	31	0.28	9	0.17	40	120	160	0.1	4	356	103	3X10	B
20	MUD	1.16	30	0.15	5	0.17	17	150	167	0.1	4	344	57	3X10	C
21	BAS	3.59	93	0.59	20	0.16	17	130	147	0.11	6	474	102	4X10	A
22	BAS	3.59	93	0.59	20	0.16	20	100	120	0.13	6	474	102	4X10	A
23	BAS	3.59	93	0.59	20	0.16	45	140	185	0.08	6	474	102	4X10	B

SUPPLY AIR TRUNK SIZE												RETURN AIR TRUNK SIZE											
	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)			
TRUNK A	401	0.07	10.3	12	x	8	602	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.05	0	0	x	8	0
TRUNK B	243	0.07	8.5	10	x	8	437	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.05	0	0	x	8	0
TRUNK C	373	0.07	10	14	x	8	480	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	85	85	85	65	180	131	0
PLENUM PRESSURE	0.14	0.14	0.14	0.14	0.14	0.14	0.14
ACTUAL DUCT LGH.	44	57	63	54	15	39	1
EQUIVALENT LENGTH	155	260	245	205	175	270	0
TOTAL EFFECTIVE LH	199	317	308	259	190	309	1
ADJUSTED PRESSURE	0.07	0.05	0.05	0.06	0.08	0.05	14.32
ROUND DUCT SIZE	5.8	6	6	5.4	7.4	7.4	0
INLET GRILL SIZE	8	8	8	8	8	8	0
INLET GRILL SIZE	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	14	0

TRUNK V	0	0.05	0	0	x	8	0
TRUNK W	0	0.05	0	0	x	8	0
TRUNK X	770	0.05	14.3	24	x	8	578
TRUNK Y	366	0.05	10.8	14	x	8	471
TRUNK Z	0	0.05	0	0	x	8	0
DROP	770	0.05	14.3	24	x	10	462

TYPE: 2503
SITE NAME: SUMMER RIDGE ESTATES

LO # 105277

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>5</u> @ 10.6 cfm	<u>53.0</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	<input checked="" type="checkbox"/> 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	<input checked="" type="checkbox"/>	3.5
BATH	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 @ 32 deg F (0 deg C)	<input checked="" type="checkbox"/> HVI Approved	

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

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																													
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																													
LO#: 105277		Model: 2503		Builder: ROYAL PINE HOMES																																																									
				Date: 6/10/2024																																																									
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>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>1135</td> <td>9</td> <td>10215</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>27,581.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>781.0 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	914	9	8226	First	914	10	9140	Second	1135	9	10215	Third	0	9	0	Fourth	0	9	0	Total:			27,581.0 ft³	Total:			781.0 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%;">0.308</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>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>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	0.308	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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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																										
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ <p>0.308 x 216.95 x 41 °C x 1.2 = 3307 W</p> <p>= 11283 Btu/h</p>			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ <p>= 0.097 x 216.95 x 6 °C x 1.2 = 154 W</p> <p>= 524 Btu/h</p>																																																										
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																										
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <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>																																																										
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	11,283	5,119	1.102																																																									
2	0.3		5,912	0.573																																																									
3	0.2		7,192	0.314																																																									
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

MODEL: 2503	BUILDER: ROYAL PINE HOMES
SFQT: 2049	SITE: SUMMER RIDGE ESTATES
LO# 105277	

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):	27581.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	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:	98.0 ft

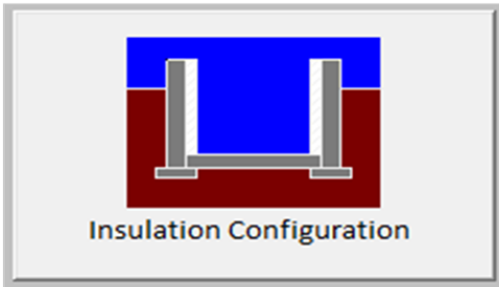
2012 OBC - COMPLIANCE PACKAGE		Compliance Package PERFORMANCE	
Component		Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value		60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value		31	27.65
Exposed Floor Minimum RSI (R)-Value		31	29.80
Walls Above Grade Minimum RSI (R)-Value		22+1.5	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	 Insulation Configuration
Floor Width (m):	7.0	
Exposed Perimeter (m):	29.9	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	0.7	
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):		961

TYPE: 2503
LO# 105277

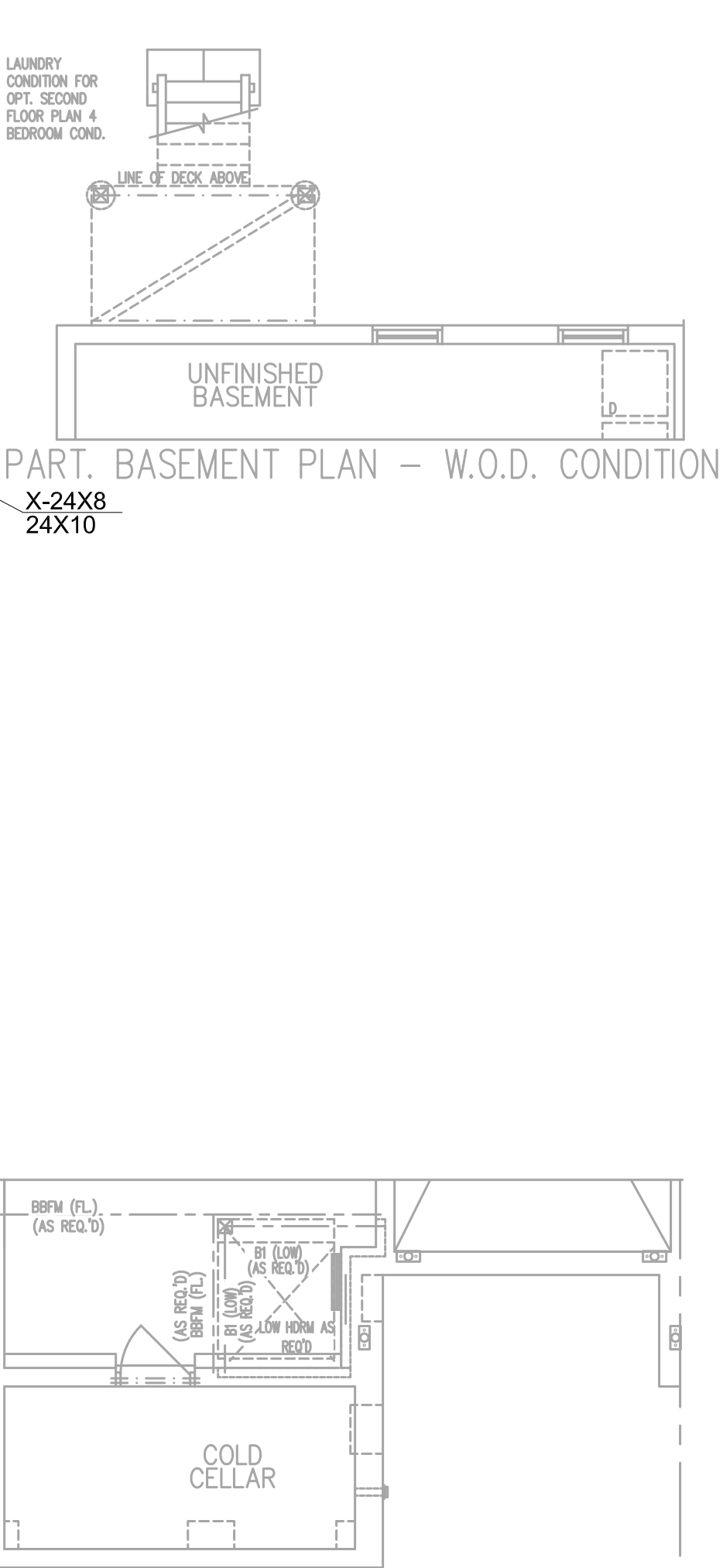
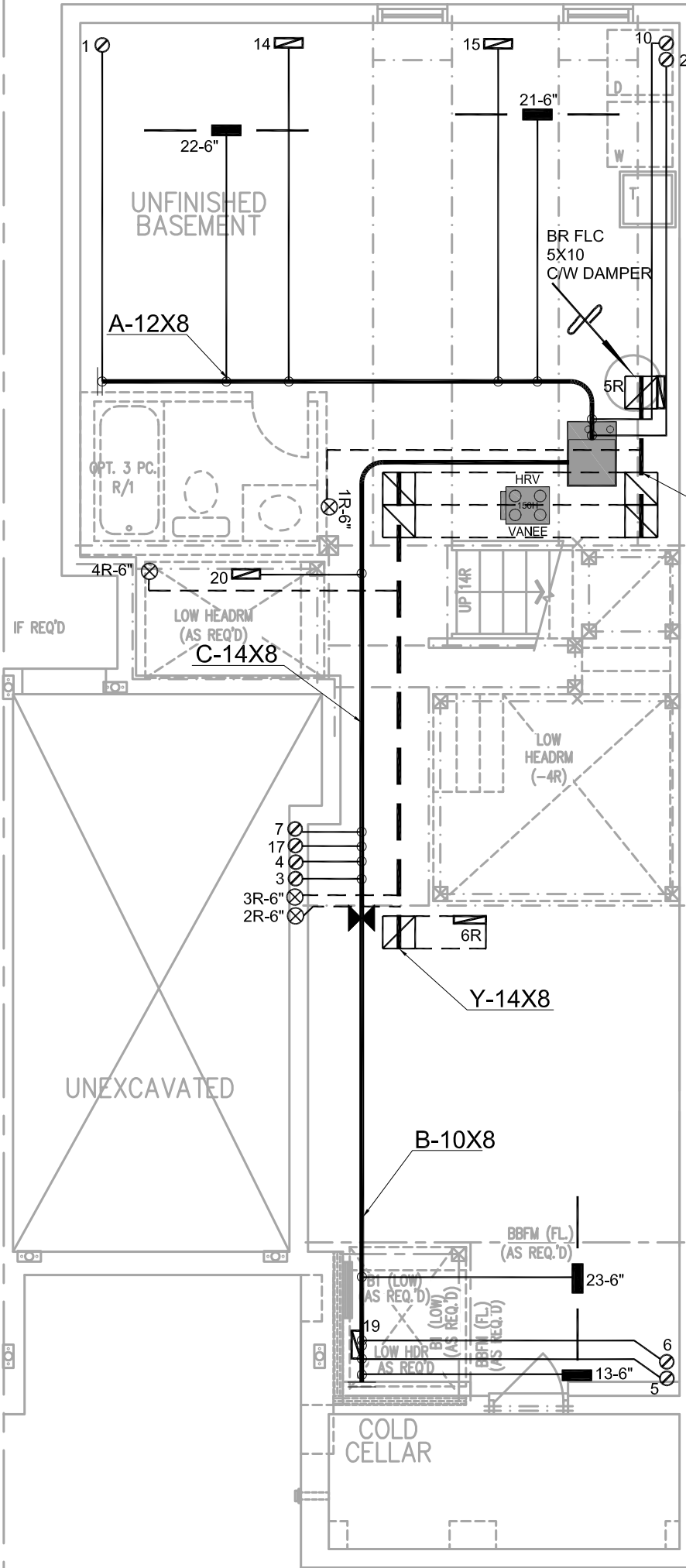
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

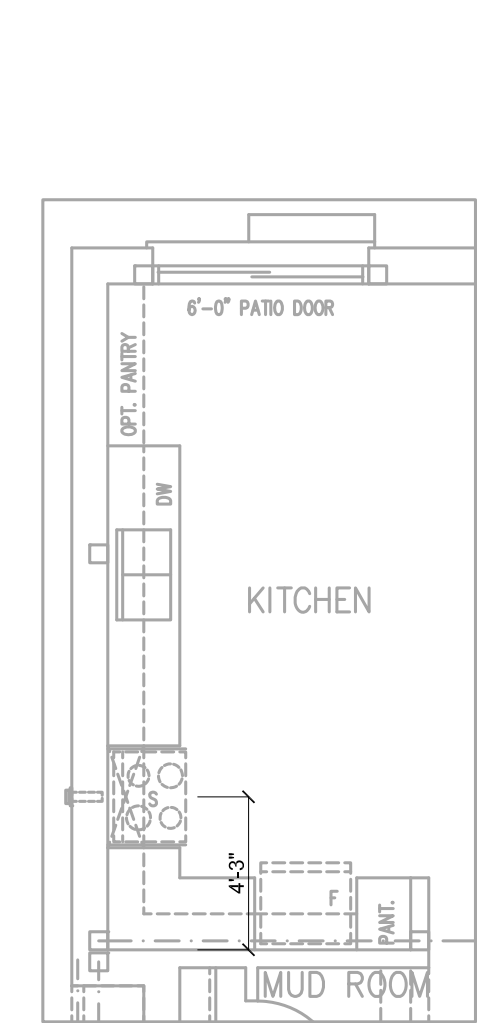
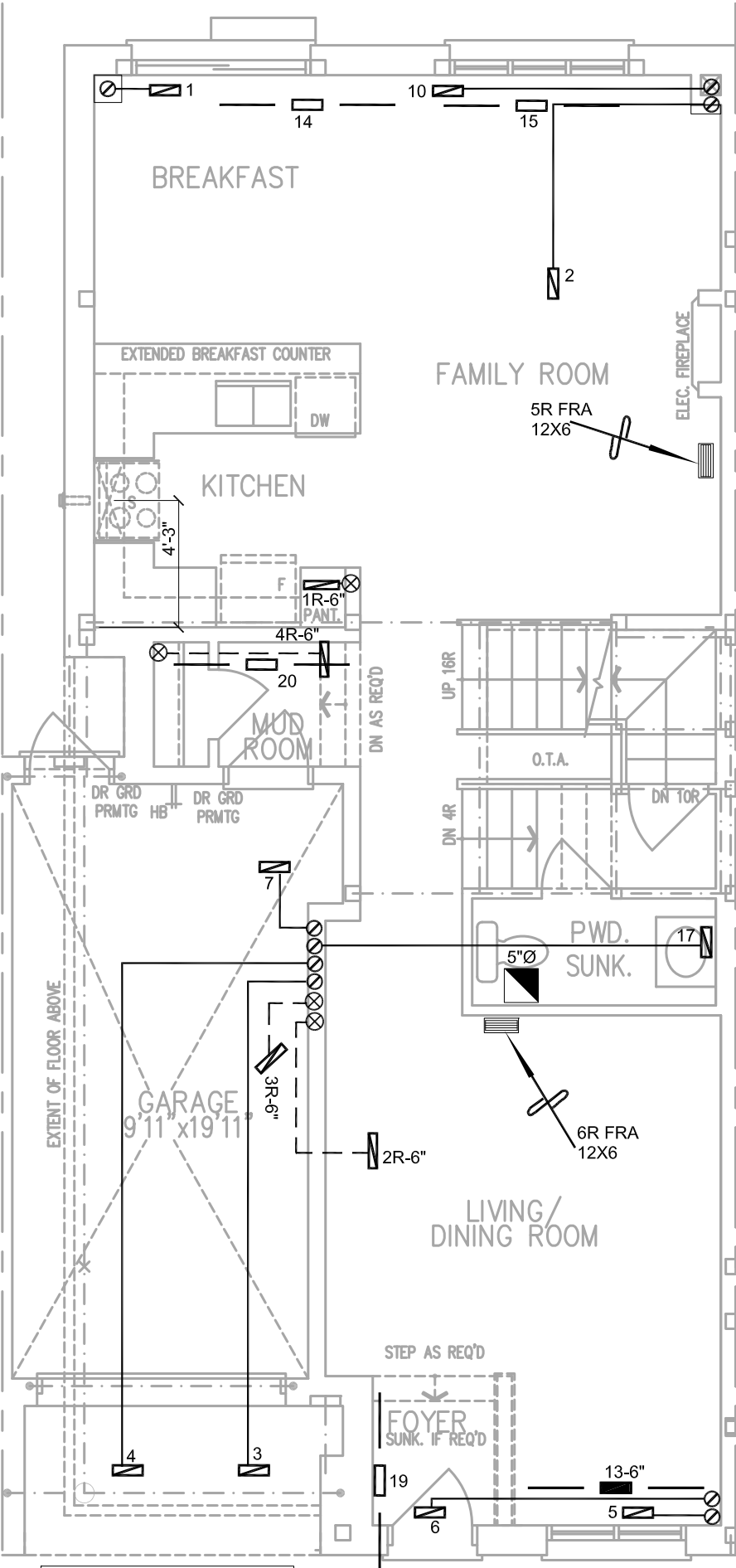
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	7.62			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	781.0			
Air Leakage/Ventilation				
Air Tightness Type:	Attached (3.0 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	874.9 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):	0.308			
Cooling Air Leakage Rate (ACH/H):	0.097			

TYPE: 2503

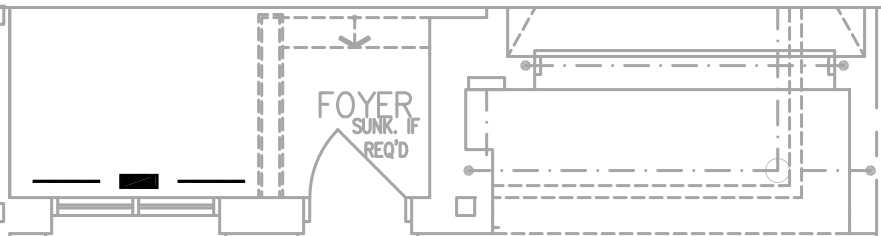
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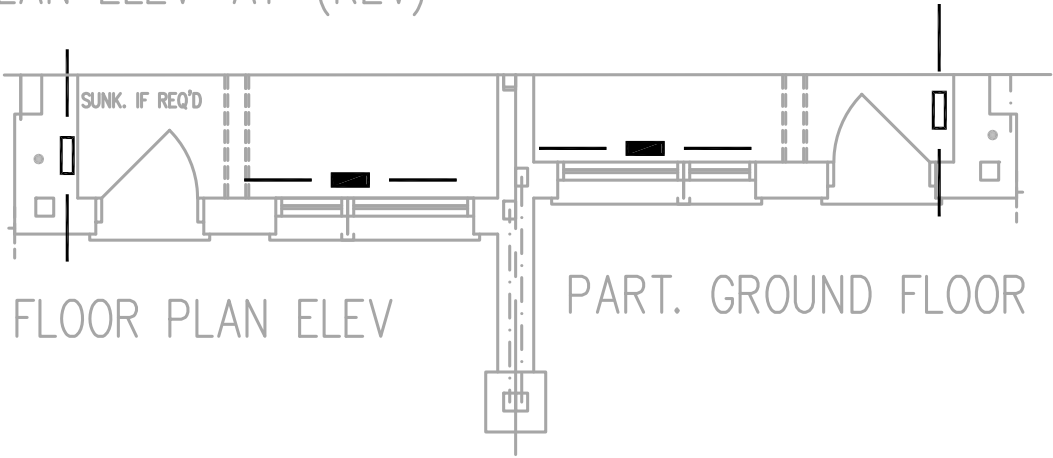
HVAC LEGEND							3.			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	DescriptionDate	
	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.							<div>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.</div> <div> Michael O'Rourke BCIN # 19669 HVAC Designs Ltd.</div>		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>			HEAT LOSS 31128 BTU/H		# OF RUNS S/A R/A FANS		Sheet Title	
ROYAL PINE HOMES					UNIT DATA		3RD FLOOR		BASEMENT HEATING LAYOUT	
Project Name					MAKE		2ND FLOOR		Date	
SUMMER RIDGE ESTATES					MODEL		1ST FLOOR		JUNE/2024	
BRAMPTON, ONTARIO					59SC6A040M14--10		BASEMENT		Scale	
					INPUT				3/16" = 1'-0"	
					40 MBTU/H				BCIN# 19669	
					OUTPUT				LO#	
					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		105277	
					COOLING					
					2.0 TONS					
					FAN SPEED					
					770 cfm @ 0.6" w.c.					
2503					2049 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.			



PARTIAL GROUND FLOOR PLAN,
ELEV 'A1' (REV) (W/ OPT. KITCHEN
LAYOUT)
(ELEV. 'B1' REV. & 'B2' SIMILAR)

















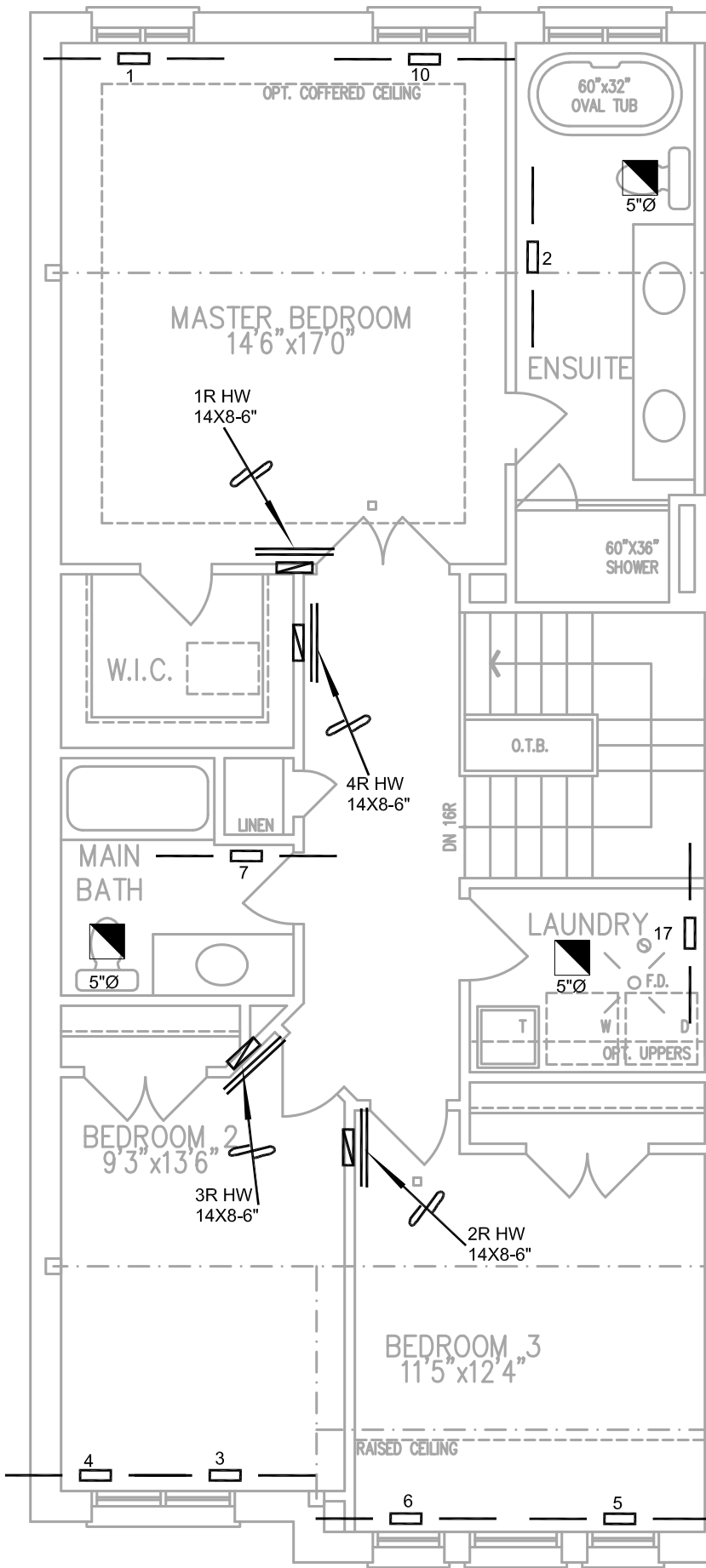
PART. GROUND FLOOR PLAN ELEV 'A2'



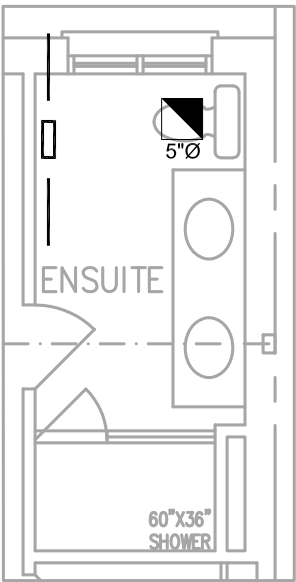
PARTIAL GROUND FLOOR PLAN ELEV
'B1' (REV)

PART. GROUND FLOOR PLAN ELEV 'B2'

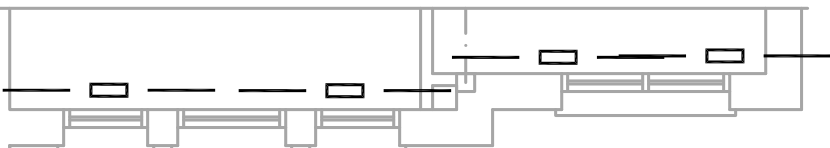
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	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date		
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS				
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Client 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				<div></div>					Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name SUMMER RIDGE ESTATES BRAMPTON, ONTARIO											Date JUNE/2024	
											Scale 3/16" = 1'-0"	
											BCIN# 19669	
2503		2049 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.				LO#			105277	



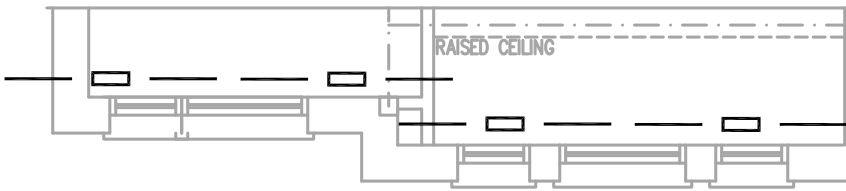
SECOND FLR PLAN ELEV 'A1' (REV)



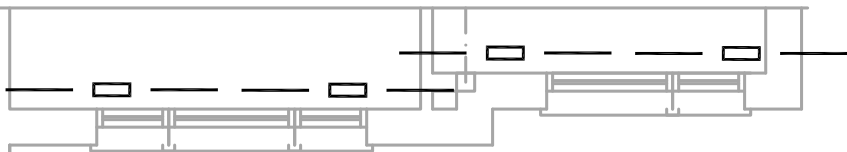
PARTIAL SECOND FLR PLAN,
ELEV 'A1' (REV)
(W/ OPT. ENSUITE LAYOUT)
(ELEV. 'B1' REV. & 'B2' SIMILAR)



PARTIAL SECOND FLR PLAN ELEV 'A2'



PARTIAL SECOND FLR PLAN, ELEV
'B1' (REV)



PARTIAL SECOND FLR PLAN, ELEV 'B2'

HVAC LEGEND								3.				
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.				
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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 JUNE/2024	
											Scale 3/16" = 1'-0"	
2503		2049 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# 105277		