

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	Postal code	Plan number/ other description	
RICHMOND HILL			
B. Individual who reviews and takes responsibility for design activities			
Name		Firm	
MICHAEL O'ROURKE		HVAC DESIGNS LTD.	
Street address		Unit no.	Lot/con.
375 FINLEY AVE		202	N/A
Municipality	Postal code	Province	E-mail
AJAX	L1S 2E2	ONTARIO	info@hvacdesigns.ca
Telephone number	Fax number	Cell number	
(905) 619-2300	(905) 619-2375	()	
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		Model: 38-7	
HEAT LOSS / GAIN CALCULATIONS		OPT 2ND	
DUCT SIZING		Project: CENTREFIELD (WEST GORMLEY)	
RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY			
RESIDENTIAL SYSTEM DESIGN per CSA-F280-12			
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 19, 2021			
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.

SITE NAME: CENTREFIELD (WEST GORMLEY) BUILDING: ROYAL PINE HOMES DATE: Apr-21 DATE: 90454 WINTER NATURAL AIR CHANGE RATE 0.230 HEAT LOSS AT °F. 78 CSA-F280-12
OPT 2ND TYPE: 38-7 GFA: 2152 SUMMER NATURAL AIR CHANGE RATE 0.072 HEAT GAIN AT °F. 13 SB-12 PERFORMANCE

ROOM USE	EXP. WALL CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BATH-2	
GRS.WALL AREA	LOSS GAIN	304	184	46	285	239	120	55	46	
GLAZING										
NORTH	21.8 16.0	11 240 176	0 0 0	0 0 0	10 218 160	0 0 0	0 0 0	0 0 0	0 0 0	
EAST	21.8 41.6	0 0 0	0 0 0	0 0 0	28 610 1163	26 566 1080	0 0 0	0 0 0	12 261 499	
SOUTH	21.8 24.9	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	17 370 423	7 152 174	0 0 0	
WEST	21.8 41.6	28 610 1163	16 349 665	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	
SKYLT.	35.8 101.2	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	
DOORS	25.8 4.3	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	4.2 0.7	265 1113 183	168 707 116	46 193 32	247 1040 171	213 897 148	103 431 71	48 203 33	34 143 24	
NET EXPOSED BSMT WALL ABOVE GR	3.7 0.6	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	269 354 158	106 139 62	65 85 38	111 146 65	164 216 96	191 251 112	103 135 61	45 59 26	
NO ATTIC EXPOSED CLG	2.8 1.3	0 0 0	0 0 0	0 0 0	25 70 31	0 0 0	0 0 0	0 0 0	0 0 0	
EXPOSED FLOOR	2.6 0.4	0 0 0	0 0 0	0 0 0	136 355 58	0 0 0	0 0 0	103 269 44	45 117 19	
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		2316	1194	279	2439	1679	1053	759	581	
SUB TOTAL HT GAIN		1680	843	0.20 0.18	1649	1324	607	312	568	
LEVEL FACTOR / MULTIPLIER		0.20 0.18	0.20 0.18	0.20 0.18	0.20 0.18	0.20 0.18	0.20 0.18	0.20 0.18	0.20 0.18	
AIR CHANGE HEAT LOSS		409	211	49	430	296	186	134	103	
AIR CHANGE HEAT GAIN		95	48	0	93	75	34	18	32	
DUCT LOSS		0	0	0	287	0	0	89	68	
DUCT GAIN		0	0	0	275	0	0	33	60	
HEAT GAIN PEOPLE	240	2	480	0	1	240	1	0	0	
HEAT GAIN APPLIANCES/LIGHTS		766	0	0	766	766	766	0	0	
TOTAL HT LOSS BTU/H		2725	1405	328	3156	1975	1239	983	752	
TOTAL HT GAIN x 1.3 BTU/H		3927	1158		3929	3126	2140	472	858	

ROOM USE	EXP. WALL CLG. HT.	GRT	KY/BR	LAUN	WIR	FOY	MUD			
GRS.WALL AREA	LOSS GAIN	468	333	110	156	385	125			
GLAZING										
NORTH	21.8 16.0	7 152 112	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0			
EAST	21.8 41.6	28 610 1163	47 1024 1953	0 0 0	0 0 0	21 457 873	0 0 0			
SOUTH	21.8 24.9	0 0 0	12 261 299	0 0 0	8 174 199	0 0 0	0 0 0			
WEST	21.8 41.6	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0			
SKYLT.	35.8 101.2	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0			
DOORS	25.8 4.3	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0			
NET EXPOSED WALL	4.2 0.7	433 1821 300	274 1151 189	110 464 76	148 622 102	324 1362 224	105 441 73			
NET EXPOSED BSMT WALL ABOVE GR	3.7 0.6	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0			
EXPOSED CLG	1.3 0.6	0 0 0	0 0 0	88 116 52	0 0 0	0 0 0	0 0 0			
NO ATTIC EXPOSED CLG	2.8 1.3	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0			
EXPOSED FLOOR	2.6 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	0			
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0			
SUBTOTAL HT LOSS		2583	2437	580	797	2853	958			
SUB TOTAL HT GAIN		1575	0.30 0.30	128	302	1267	158			
LEVEL FACTOR / MULTIPLIER		0.30 0.30	0.30 0.30	0.20 0.18	0.30 0.30	0.30 0.30	0.30 0.30			
AIR CHANGE HEAT LOSS		773	729	102	238	854	287			
AIR CHANGE HEAT GAIN		89	0	7	17	71	9			
DUCT LOSS		0	0	0	0	0	0			
DUCT GAIN		0	0	0	0	0	0			
HEAT GAIN PEOPLE	240	0	0	0	0	0	0			
HEAT GAIN APPLIANCES/LIGHTS		766	0	766	0	0	0			
TOTAL HT LOSS BTU/H		3356	3166	682	1035	3707	1244			
TOTAL HT GAIN x 1.3 BTU/H		3158	4348	1171	414	1740	216			

TOTAL HEAT GAIN BTU/H: 28952 TONS: 2.41 LOSS DUE TO VENTILATION LOAD BTU/H: 1670 STRUCTURAL HEAT LOSS: 37909 TOTAL COMBINED HEAT LOSS BTU/H: 39579

Michael O'Rourke

SITE NAME: CENTREFIELD (WEST GORMLEY)
BUILDING: ROYAL PINE HOMESTYPE: 38-7
OPT 2ND

DATE: Apr-21

GFA: 2152 LO# 90454

HEATING CFM 970 COOLING CFM 970
TOTAL HEAT LOSS 37,909 TOTAL HEAT GAIN 28,678
AIR FLOW RATE CFM 25.59 AIR FLOW RATE CFM 33.82

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	13	7	4
R/A	0	0	4	1	1

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	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BATH-2	BED-2	MBR	BED-3	GRT	GRT	K7/BR	K7/BR	BATH	LAUN	WIR	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.36	1.41	1.41	1.58	0.99	1.24	0.49	0.75	1.58	1.36	0.99	1.68	1.68	1.58	1.58	0.49	0.68	1.04	3.71	1.24	3.04	3.04	3.04	3.04
CFM PER RUN HEAT	35	36	8	40	25	32	13	19	40	35	25	43	43	41	41	13	17	26	95	32	78	78	78	78
RM GAIN MBH	1.96	1.16	1.16	1.96	1.56	2.14	0.24	0.86	1.96	1.96	1.56	1.58	1.58	2.17	2.17	0.24	1.17	0.41	1.74	0.22	0.48	0.48	0.48	0.48
CFM PER RUN COOLING	66	39	3	66	53	72	8	29	66	66	53	53	53	74	74	8	40	14	59	7	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	0.16	0.17	0.17	0.17	0.17	0.17
EQUIVALENT LENGTH	130	190	190	170	150	130	180	130	170	170	160	150	130	120	120	140	140	120	140	120	160	120	150	150
TOTAL EFFECTIVE LENGTH	161	228	229	225	208	151	229	180	220	211	227	182	153	150	142	184	162	157	178	151	186	188	140	190
ADJUSTED PRESSURE	0.11	0.08	0.08	0.08	0.08	0.11	0.08	0.1	0.08	0.08	0.08	0.09	0.11	0.11	0.12	0.09	0.11	0.11	0.09	0.11	0.09	0.09	0.12	0.09
ROUND DUCT SIZE	5	4	4	5	5	6	4	4	5	5	5	5	5	5	5	4	4	4	6	4	5	5	5	5
HEATING VELOCITY (ft/min)	257	413	92	294	184	163	149	218	294	257	184	316	316	301	301	149	195	298	484	367	573	573	573	573
COOLING VELOCITY (ft/min)	485	447	34	485	389	367	92	333	485	485	389	389	389	543	543	92	459	161	301	80	117	117	117	117
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	A	D	B	C	E	C	C	B	A	C	A	D	A	A	C	E	D	B	D	A	A	D	B

RUN #	ROOM NAME	RM LOSS MBH	CFM PER RUN HEAT	RM GAIN MBH	CFM PER RUN COOLING	ADJUSTED PRESSURE	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	ROUND DUCT SIZE	HEATING VELOCITY (ft/min)	COOLING VELOCITY (ft/min)	OUTLET GRILL SIZE	TRUNK
1	TRUNK A	387	0.08	9.8	12	X	8	581	0.00	0	0	0	0	0
2	TRUNK B	253	0.08	8.4	8	X	8	569	0.00	0	0	0	0	0
3	TRUNK C	348	0.08	9.4	12	X	8	522	0.00	0	0	0	0	0
4	TRUNK D	535	0.08	11.1	16	X	8	602	0.00	0	0	0	0	0
5	TRUNK E	971	0.08	13.9	22	X	8	794	0.00	0	0	0	0	0
6	TRUNK F	0	0.00	0	0	X	8	0	0.00	0	0	0	0	0

SUPPLY 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 A	387	0.08	9.8	12	X	8	0.00	0	0	0
TRUNK B	253	0.08	8.4	8	X	8	0.00	0	0	0
TRUNK C	348	0.08	9.4	12	X	8	0.00	0	0	0
TRUNK D	535	0.08	11.1	16	X	8	0.00	0	0	0
TRUNK E	971	0.08	13.9	22	X	8	0.00	0	0	0
TRUNK F	0	0.00	0	0	X	8	0.00	0	0	0

RETURN AIR #	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
1	130	0.15	0.15	0.15	0.15	130	0.15	0.15	0.15	0.15
2	36	63	60	40	34	36	63	60	40	34
3	215	255	195	175	260	215	255	195	175	260
4	251	318	255	215	294	251	318	255	215	294
5	0.06	0.05	0.06	0.07	0.05	0.06	0.05	0.06	0.07	0.05
6	7	7	6	6.9	10.6	7	7	6	6.9	10.6
7	8	8	8	8	8	8	8	8	8	8
8	X	X	X	X	X	X	X	X	X	X
9	14	14	14	14	14	14	14	14	14	14

TYPE: 38-7
SITE NAME: CENTREFIELD (WEST GORMLEY)

LO # 90454
OPT 2ND

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>3</u> @ 10.6 cfm	<u>31.8</u> cfm
Kitchen & Bathrooms	<u>5</u> @ 10.6 cfm	<u>53</u> cfm
Other Rooms	<u>3</u> @ 10.6 cfm	<u>31.8</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>79.5</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>159</u>	cfm
Less Principal Ventil. Capacity	<u>79.5</u>	cfm
Required Supplemental Capacity	<u>79.5</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
<u>79.5</u> cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
79.5 CFM	X 78 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
W/R	BY INSTALLING CONTRACTOR	50	☒	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
<u>155</u> cfm high	<u>64</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 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:	April-21

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																							
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																							
LO#: 90454	Model: 38-7	Builder: ROYAL PINE HOMES	Date: 4/19/2021																																																																				
Volume Calculation		Air Change & Delta T Data																																																																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>House Volume</th> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> <tr> <td>Bsmt</td> <td></td> <td>910</td> <td>10</td> <td>9100</td> </tr> <tr> <td>First</td> <td></td> <td>910</td> <td>10</td> <td>9164</td> </tr> <tr> <td>Second</td> <td></td> <td>1242</td> <td>9</td> <td>11426.4</td> </tr> <tr> <td>Third</td> <td></td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td></td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="2">Total:</td> <td></td> <td></td> <td>29,990.4 ft³</td> </tr> <tr> <td colspan="2">Total:</td> <td></td> <td></td> <td>849.2 m³</td> </tr> </table>		House Volume	Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt		910	10	9100	First		910	10	9164	Second		1242	9	11426.4	Third		0	9	0	Fourth		0	9	0	Total:				29,990.4 ft³	Total:				849.2 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="4">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> </tr> <tr> <td>Winter DTDh</td> <td>22</td> <td>-21</td> <td>43</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>31</td> <td>7</td> </tr> <tr> <td></td> <td></td> <td></td> <td>ΔT °F</td> </tr> <tr> <td></td> <td></td> <td></td> <td>78</td> </tr> <tr> <td></td> <td></td> <td></td> <td>13</td> </tr> </table>		Design Temperature Difference					Tin °C	Tout °C	ΔT °C	Winter DTDh	22	-21	43	Summer DTDc	24	31	7				ΔT °F				78				13
House Volume	Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																																			
Bsmt		910	10	9100																																																																			
First		910	10	9164																																																																			
Second		1242	9	11426.4																																																																			
Third		0	9	0																																																																			
Fourth		0	9	0																																																																			
Total:				29,990.4 ft³																																																																			
Total:				849.2 m³																																																																			
Design Temperature Difference																																																																							
	Tin °C	Tout °C	ΔT °C																																																																				
Winter DTDh	22	-21	43																																																																				
Summer DTDc	24	31	7																																																																				
			ΔT °F																																																																				
			78																																																																				
			13																																																																				
6.2.6 Sensible Gain due to Air Leakage																																																																							
$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$																																																																							
0.230	x	235.90	x																																																																				
		7 °C	x																																																																				
		1.2	=																																																																				
			144 W																																																																				
			=																																																																				
			493 Btu/h																																																																				
6.2.7 Sensible heat Gain due to Ventilation																																																																							
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																																							
80 CFM	x	13 °F	x																																																																				
		1.08	x																																																																				
		0.25	=																																																																				
			275 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;"> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{level})</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)</th> </tr> <tr> <td>1</td> <td>0.5</td> <td rowspan="4">9,603</td> <td>7,354</td> <td>0.653</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>9,627</td> <td>0.299</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>10,879</td> <td>0.177</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></td> <td>0</td> <td>0.000</td> </tr> </table>				Level	Level Factor (LF)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{level})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)	1	0.5	9,603	7,354	0.653	2	0.3	9,627	0.299	3	0.2	10,879	0.177	4	0	0	0.000	5	0		0	0.000																																									
Level	Level Factor (LF)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{level})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																																			
1	0.5	9,603	7,354	0.653																																																																			
2	0.3		9,627	0.299																																																																			
3	0.2		10,879	0.177																																																																			
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																																																																							

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	38-7	OPT 2ND	BUILDER:	ROYAL PINE HOMES
SFQT:	2152	LO#	90454	SITE: CENTREFIELD (WEST GORMLEY)

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-6	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75

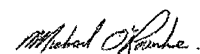
BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	29990.4	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	2.00	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 46.0 ft	WIDTH: 28.0 ft	EXPOSED PERIMETER:	148.0 ft

2012 OBC - COMPLIANCE PACKAGE		
Component	Compliance Package SB-12 PERFORMANCE	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
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	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

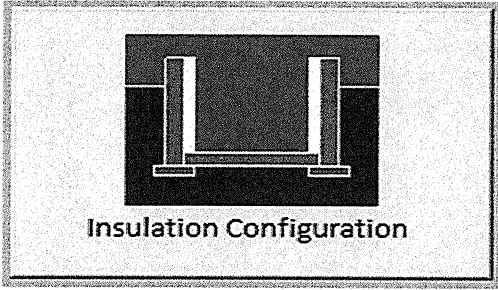
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Richmond Hill	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	14.0	 Insulation Configuration
Floor Width (m):	8.5	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
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):		1448

TYPE: 38-7
LO# 90454

OPT 2ND

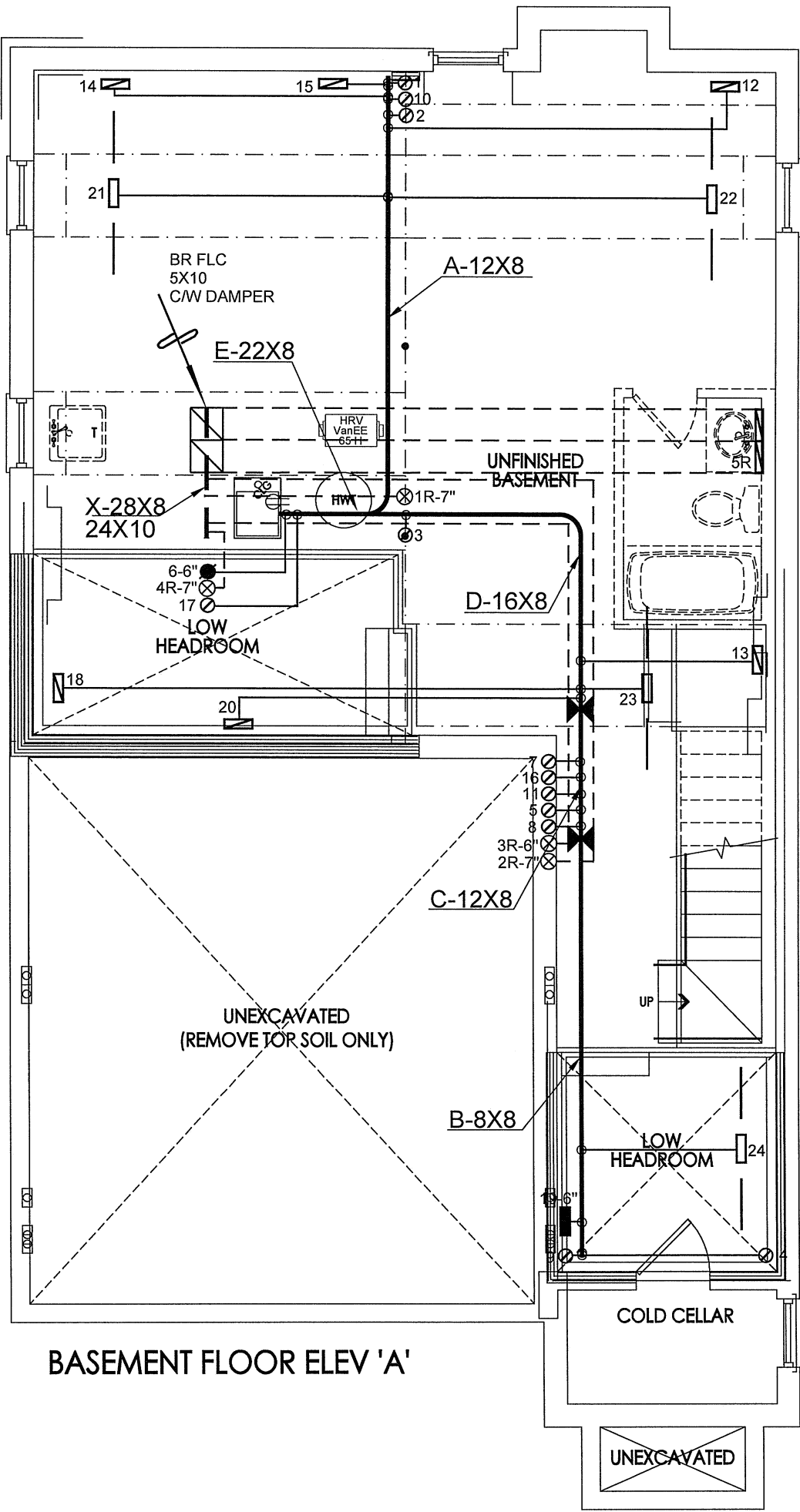
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Richmond Hill			
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):	6.89			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	849.2			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	792.8 cm ²		
	2.50	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	37.5	37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.230			
Cooling Air Leakage Rate (ACH/H):	0.072			

TYPE: 38-7
LO# 90454

OPT 2ND



BASEMENT FLOOR ELEV 'A'

I MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

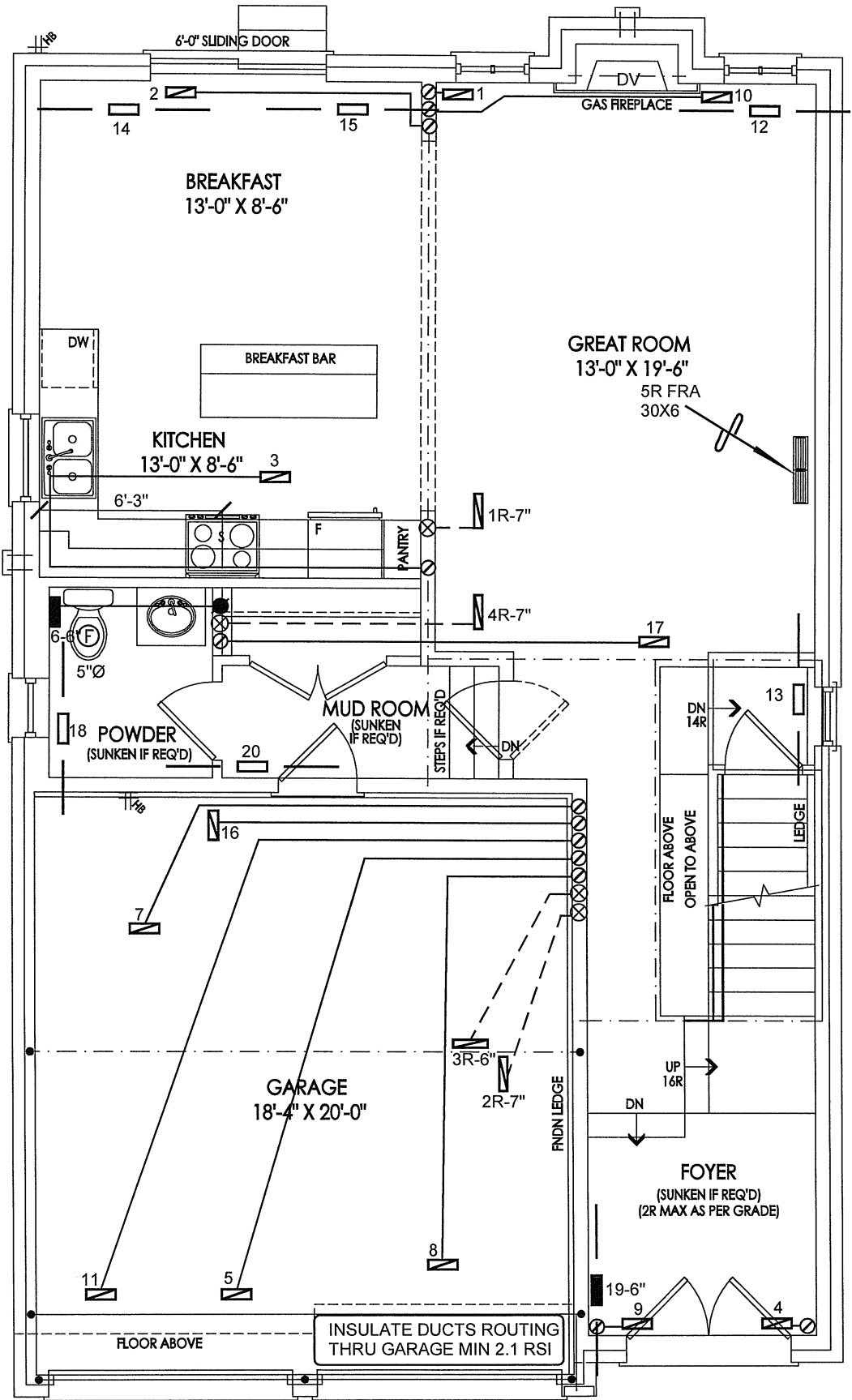
CSA-F280-12

SB-12 PERFORMANCE

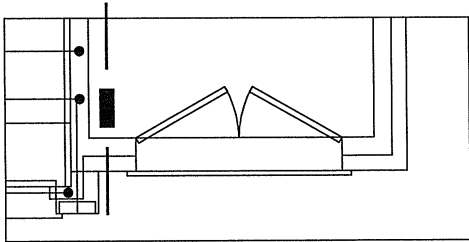
HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 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.

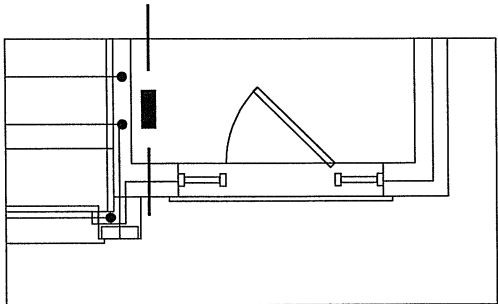
Client		HVACDESIGNS LTD. 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services		HEAT LOSS 39579 BTU/H		# OF RUNS		S/A		R/A		FANS		Sheet Title	
ROYAL PINE HOMES				UNIT DATA		3RD FLOOR								BASEMENT	
Project Name		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.		MAKE		2ND FLOOR		13		4		4		Date	
CENTREFIELD (WEST GORMLEY)				CARRIER		1ST FLOOR		7		1		2		APR/2021	
RICHMOND HILL, ONTARIO				MODEL		BASEMENT		4		1		0		Scale	
				59TN6A-060-14V										3/16" = 1'-0"	
				INPUT		60		MBTU/H							
				OUTPUT		58		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		LO#		90454	
		COOLING		2.5		TONS									
38-7 - OPT 2ND		2152 sqft		FAN SPEED		970		cfm @ 0.6" w.c.							



GROUND FLOOR ELEV 'A'



GROUND FLOOR ELEV 'B'



GROUND FLOOR ELEV 'C'

I MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

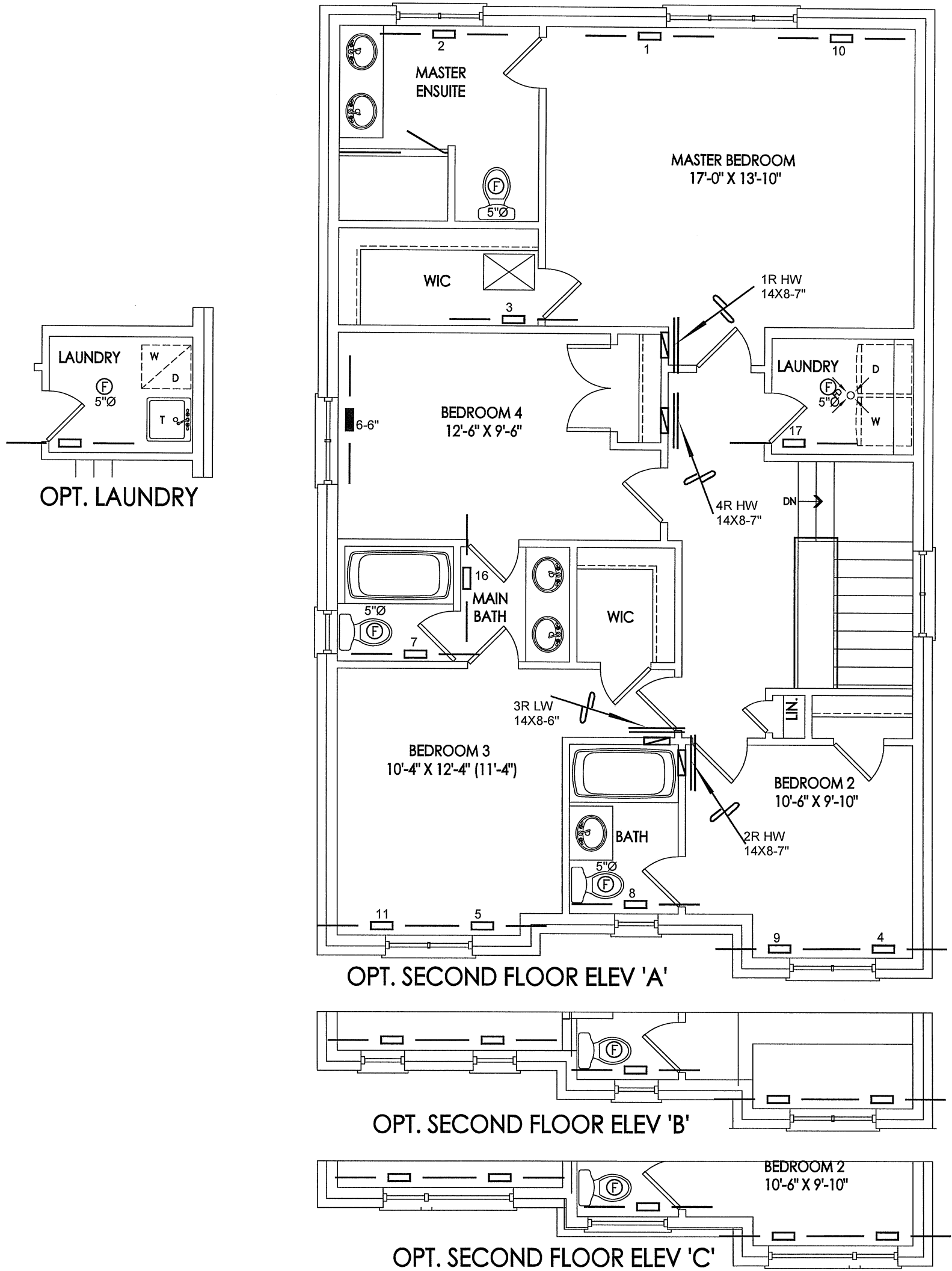
CSA-F280-12

SB-12 PERFORMANCE

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
	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.

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 CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			Date	APR/2021
			Scale	3/16" = 1'-0"
		BCIN# 19669		
38-7 - OPT 2ND 2152 sqft		LO#	90454	



I MICHAEL O'ROURKE HAVE REVIEW
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C.3.2.5 OF THE
BUILDING CODE.

Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12

SB-12 PERFORMANCE

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.

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 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 SECOND FLOOR HEATING LAYOUT	
		Date	APR/2021
		Scale	3/16" = 1'-0"
		BCIN# 19669	
		LO#	90454

38-7 - OPT 2ND2152 sqft