


## 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 VAUGHAN (WOODBIDGE)	Postal code	Plan number/ other description			
<b>B. Individual who reviews and takes responsibility for design activities</b>					
Name <b>MICHAEL O'ROURKE</b>		Firm <b>HVAC DESIGNS LTD.</b>			
Street address <b>375 FINLEY AVE</b>			Unit no. <b>202</b>	Lot/con. <b>N/A</b>	
Municipality <b>AJAX</b>	Postal code <b>L1S 2E2</b>	Province <b>ONTARIO</b>	E-mail <b>info@hvacdesigns.ca</b>		
Telephone number <b>(905) 619-2300</b>	Fax number <b>(905) 619-2375</b>	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 <b>HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12</b>			<b>Model:</b> 4203- THE FORESTCREST OPT. 5 BED - WOB <b>Project:</b> PINE VALLEY & TESTON		
<b>D. Declaration of Designer</b>					
I, <u><b>MICHAEL O'ROURKE</b></u> (print name)				declare that (choose one as appropriate):	
<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.					
September 11, 2018					
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: PINE VALLEY & TESTON TYPE: 4203- THE FORESTCREST DATE: Sep-18 WINTER NATURAL AIR CHANGE RATE 0.407 HEAT LOSS AT °F. 76 CSA-F280-12  
BUILDER: GOLD PARK HOMES OPT. 5 BED - WOB LO# 78977 SUMMER NATURAL AIR CHANGE RATE 0.137 HEAT GAIN AT °F. 13 SB-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	MR	ENS	HIS	BED-2	BED-3	BED-4	ENS-5	BED-5	ENS-3	ENS-4	HRS
GRS.WALL AREA	342	333	333	333	333	63	144	297	432	54	108	81	72	54
GLAZING	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NORTH	21.3	16.0	0	0	0	0	0	0	0	0	0	0	0	0
EAST	21.3	41.6	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	21.3	24.9	0	0	0	0	0	0	0	0	0	0	0	0
WEST	21.3	41.6	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	37.2	101.6	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	25.2	4.3	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.5	0.8	298	1330	224	312	1392	235	371	48	206	36	80	402
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.6	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	357	488	210	280	359	165	180	72	92	42	168	216
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.8	0.4	0	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS	2724	2262	2199	1272	1289	398	101	3133	3280	488	276	762	840	410
SUB TOTAL HT GAIN	0.20	0.36	0.20	0.36	0.20	0.36	0.20	0.36	0.20	0.36	0.20	0.36	0.20	0.36
LEVEL FACTOR / MUL TIPLIER	385	795	795	459	459	144	46	1133	1166	169	382	272	340	148
AIR CHANGE HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DUCT LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DUCT GAIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	2	480	0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLANCES/LIGHTS	888	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL HT LOSS BTU/H	3710	2994	2994	1728	1728	542	142	4653	4466	637	1362	1126	1408	559
TOTAL HT GAIN x 1.3 BTU/H			1796					5720	5261	390	1945	408	1129	167

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	DIN	LIV	KT/IGT	STUDY	LAUN	PWD	FOY	MUD	WOB	BAS
GRS.WALL AREA	132	420	420	132	420	825	110	0	66	661	312	430	1085
GLAZING	0	0	0	0	0	0	0	0	0	0	0	0	0
NORTH	21.3	16.0	0	0	0	0	0	0	0	0	0	0	0
EAST	21.3	41.6	0	0	0	0	0	0	0	0	0	0	0
SOUTH	21.3	24.9	0	0	0	0	0	0	0	0	0	0	0
WEST	21.3	41.6	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	37.2	101.6	0	0	0	0	0	0	0	0	0	0	0
DOORS	25.2	4.3	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.5	0.8	100	446	75	346	1544	260	707	3155	531	10	292
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.6	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.8	0.4	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS	1127	566	3415	2238	2238	5746	4689	320	285	3584	1808	562	4968
SUB TOTAL HT GAIN	0.30	0.55	0.30	0.55	0.30	0.55	0.30	0.36	0.30	0.55	0.30	0.55	0.50
LEVEL FACTOR / MUL TIPLIER	815	1863	1863	451	451	3134	405	116	161	1955	986	4479	15274
AIR CHANGE HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0	0	0	0	0	0	0
DUCT LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0
DUCT GAIN	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLANCES/LIGHTS	588	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL HT LOSS BTU/H	1742	5278	5278	1278	1278	8879	7385	479	455	5540	2784	4929	20132
TOTAL HT GAIN x 1.3 BTU/H			3926					1000	70	853	1195	5923	2017

TOTAL HEAT GAIN BTU/H: 49329 TONS: 4.11 LOSS DUE TO VENTILATION LOAD BTU/H: 3181 STRUCTURAL HEAT LOSS: 74731 TOTAL COMBINED HEAT LOSS BTU/H: 77812

*Michael O'Rourke*

**79977**

AFUE = 96 %  
INPUT (BTU/H) = 88,000  
OUTPUT (BTU/H) = 85,000

sure r/a 0.15

Run ID	Run #		Run Name		Run Date		Run Time		Run Location		Run Status		Run Type		Run Category		Run Subcategory		Run Detail		Run Action		Run Result		Run Comment	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
MBR	1.85	1.50	1.73	2.35	2.35	2.23	0.56	0.64	1.13	1.85	1.41	1.74	2.64	2.96	2.96	1.28	0.48	0.46	5.54	7.28	5.01	5.01	5.01	5.01	5.01	
	38	31	35	48	48	46	11	13	23	38	36	36	54	60	60	26	10	9	113	57	102	102	102	102	102	
CFM PER RUN HEAT	2.29	0.90	0.90	1.83	2.86	2.63	0.17	0.39	0.41	2.29	1.13	1.59	1.96	2.46	2.46	1.56	1.00	0.07	0.85	1.19	1.57	1.57	1.57	1.57	1.57	
RM GAIN MBR.	72	28	28	57	89	82	5	12	13	72	35	50	61	77	77	49	31	2	27	37	49	49	49	49	49	
CFM PER RUN COOLING	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.15	0.17	0.16	0.16	0.16	0.16	0.16	
ADJUSTED PRESSURE	46	62	72	29	47	64	35	53	42	41	42	8	28	57	49	35	32	43	55	8	63	43	24	46	46	
ACTUAL DUCT LGH.	130	160	140	160	150	170	140	180	190	130	120	90	150	130	120	140	110	140	120	130	180	130	150	110	110	
EQUIVALENT LENGTH	176	222	212	189	197	234	175	233	232	171	162	98	178	187	169	175	142	183	175	138	243	173	174	156	156	
TOTAL EFFECTIVE LENGTH	0.1	0.08	0.08	0.09	0.08	0.07	0.1	0.07	0.07	0.1	0.11	0.18	0.1	0.09	0.1	0.1	0.12	0.09	0.09	0.12	0.07	0.09	0.09	0.1	0.1	
ADJUSTED PRESSURE	5	4	4	5	6	6	4	4	4	5	4	4	5	5	5	4	4	4	6	4	6	6	6	6	6	
ROUND DUCT SIZE	356	356	356	257	245	235	126	149	264	279	333	413	396	441	441	298	115	103	576	654	520	520	520	520	520	
HEATING VELOCITY (ft/min)	529	321	321	419	454	418	57	138	149	529	402	574	448	565	565	582	356	23	138	424	250	250	250	250	250	
COOLING VELOCITY (ft/min)	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	4X10	4X10	
OUTLET GRILL SIZE	C	A	A	D	C	B	E	A	E	E	C	D	B	A	A	A	C	B	B	E	A	D	B	B	B	
TRUNK	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	4X10	4X10	

RUN #	25	26	27	28	29	30	31
ROOM NAME	BED-3	BED-4	KIT/GT	LIV	HIS	BAS	BED-5
RM LOSS MBH	2.35	2.96	2.64	2.64	0.54	5.01	1.36
CFM PER RUN HEAT	48	46	60	54	11	102	28
RM GAIN MBH	2.86	2.63	2.46	1.96	0.14	1.57	1.94
CFM PER RUN COOLING	89	82	77	61	4	49	61
ADJUSTED PRESSURE	0.16	0.16	0.17	0.17	0.17	0.16	0.17
ACTUAL DUCT LGH	49	66	41	31	73	12	60
EQUIVALENT LENGTH	170	130	90	130	180	120	180
TOTAL EFFECTIVE LENGTH	219	196	131	161	253	132	240
ADJUSTED PRESSURE	0.07	0.08	0.13	0.11	0.07	0.12	0.07
ROUND DUCT SIZE	6	5	5	5	4	5	5
HEATING VELOCITY (ft/min)	245	338	441	396	126	749	206
COOLING VELOCITY (ft/min)	454	602	565	448	46	360	448
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	C	R	C	B	A	D	A

SUPPLY AIR TRUNK SIZE										RETURN AIR TRUNK SIZE									
TRUNK					VELOCITY (ft/min)					TRUNK					VELOCITY (ft/min)				
CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	
TRUNK A	362	0.07	12	8	TRUNK G	0	0.00	0	8	TRUNK O	0	0.06	0	0	TRUNK P	0	0.06	0	0
TRUNK B	526	0.07	11.4	8	TRUNK H	0	0.00	0	8	TRUNK Q	0	0.06	0	0	TRUNK R	0	0.06	0	0
TRUNK C	1121	0.07	15.1	26	TRUNK I	0	0.00	0	8	TRUNK S	0	0.06	0	0	TRUNK T	0	0.06	0	0
TRUNK D	275	0.09	8.4	8	TRUNK J	0	0.00	0	8	TRUNK U	0	0.06	0	0	TRUNK V	0	0.06	0	0
TRUNK E	1250	0.07	15.8	28	TRUNK K	0	0.00	0	8	TRUNK W	0	0.06	0	0	TRUNK X	0	0.06	0	0
TRUNK F	0	0.00	0	8	TRUNK L	0	0.00	0	8	TRUNK Y	0	0.06	0	0	TRUNK Z	0	0.06	0	0

[illegible]

TYPE: 4203- THE FORESTCREST  
SITE NAME: PINE VALLEY & TESTON

LO # 79977  
OPT. 5 BED - WOB

**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	2 @ 21.2 cfm	42.4 cfm
Other Bedrooms	4 @ 10.6 cfm	42.4 cfm
Kitchen & Bathrooms	7 @ 10.6 cfm	74.2 cfm
Other Rooms	7 @ 10.6 cfm	74.2 cfm
Table 9.32.3.A.	TOTAL	233.2 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	95.4	cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	233.2	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	78.2	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model:	VANEE 65H
Location:	BSMT
155.0 cfm	3.0 sones
<input checked="" type="checkbox"/> HVI Approved	

PRINCIPAL EXHAUST HEAT LOSS CALCULATION	
CFM	ΔT °F
155.0 CFM	76 F
X	X
FACTOR	% LOSS
1.08	0.25

SUPPLEMENTAL FANS		NUTONE	
Location	Model	cfm	HVI
ENS	QTXEN050C	50	✓
ENS-5	QTXEN050C	50	✓
ENS-4	QTXEN050C	50	✓
PWD	QTXEN050C	50	✓

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	VANEE 65H	
155 cfm high	64 cfm low	
75 % 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:	
GOLD PARK 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:	September-18

<b>CSA F280-12 Residential Heat Loss and Heat Gain Calculations</b>																																									
<b>Formula Sheet (For Air Leakage / Ventilation Calculation)</b>																																									
LO#: 79977		Model: 4203- THE FORESTCREST		Builder: GOLD PARK HOMES		Date: 9/11/2018																																			
<b>Volume Calculation</b>																																									
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>House Volume Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> <tr> <td>Bsmt</td> <td>1728</td> <td>10</td> <td>17280</td> </tr> <tr> <td>First</td> <td>1728</td> <td>11</td> <td>19008</td> </tr> <tr> <td>Second</td> <td>2103</td> <td>9</td> <td>18927</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">Total:</td> <td></td> <td>55,215.0 ft³</td> </tr> <tr> <td colspan="2">Total:</td> <td></td> <td>1563.5 m³</td> </tr> </table>										House Volume Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1728	10	17280	First	1728	11	19008	Second	2103	9	18927	Third	0	9	0	Fourth	0	9	0	Total:			55,215.0 ft³	Total:			1563.5 m³
House Volume Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																						
Bsmt	1728	10	17280																																						
First	1728	11	19008																																						
Second	2103	9	18927																																						
Third	0	9	0																																						
Fourth	0	9	0																																						
Total:			55,215.0 ft³																																						
Total:			1563.5 m³																																						
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="2">WINTER NATURAL AIR CHANGE RATE</th> <th>0.407</th> </tr> <tr> <th colspan="2">SUMMER NATURAL AIR CHANGE RATE</th> <th>0.137</th> </tr> </table>										WINTER NATURAL AIR CHANGE RATE		0.407	SUMMER NATURAL AIR CHANGE RATE		0.137																										
WINTER NATURAL AIR CHANGE RATE		0.407																																							
SUMMER NATURAL AIR CHANGE RATE		0.137																																							
<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>-20</td> <td>42</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>76</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	-20	42	Summer DTDc	24	31	7				76				13								
Design Temperature Difference																																									
	Tin °C	Tout °C	ΔT °C																																						
Winter DTDh	22	-20	42																																						
Summer DTDc	24	31	7																																						
			76																																						
			13																																						
<b>5.2.3.1 Heat Loss due to Air Leakage</b>																																									
$HL_{air-b} = LR_{air-b} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$																																									
0.407	x	434.31	x	42 °C	x	1.2	=	8953 W																																	
								=	30549 Btu/h																																
<b>5.2.3.2 Heat Loss due to Mechanical Ventilation</b>																																									
$HL_{vair-b} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																									
155 CFM	x	76 °F	x	1.08	x	0.25	=	3181 Btu/h																																	
<b>5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)</b>																																									
$HL_{qirr} = Level Factor \times HL_{airbv} \times \{(HL_{qgr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																									
<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<sub>level</sub>)</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)</th> </tr> <tr> <td>1</td> <td>0.5</td> <td rowspan="5">30,549</td> <td>9,234</td> <td>1.654</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>16,802</td> <td>0.545</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>16,893</td> <td>0.362</td> </tr> <tr> <td>4</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> <tr> <td>5</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> </table>										Level	Level Factor (LF)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL <sub>level</sub> )	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)	1	0.5	30,549	9,234	1.654	2	0.3	16,802	0.545	3	0.2	16,893	0.362	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 <sub>level</sub> )	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																					
1	0.5	30,549	9,234	1.654																																					
2	0.3		16,802	0.545																																					
3	0.2		16,893	0.362																																					
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>																																									

**HEAT LOSS AND GAIN SUMMARY SHEET**

<b>MODEL:</b> 4203- THE FORESTCREST	<b>OPT. 5 BED - WOB</b>	<b>BUILDER:</b> GOLD PARK HOMES
<b>SFQT:</b> 3688	<b>LO#</b> 79977	<b>SITE:</b> PINE VALLEY & TESTON

**DESIGN ASSUMPTIONS**

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-4	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:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	55215.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 66.0 ft	WIDTH: 33.0 ft	EXPOSED PERIMETER:	155.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	43.0 ft

**2012 OBC - COMPLIANCE PACKAGE**

Component	Compliance Package A1	
	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	17.03
Basement Walls Minimum RSI (R)-Value	20 ci	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	0.28	-
Skylights Maximum U-Value	0.49	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

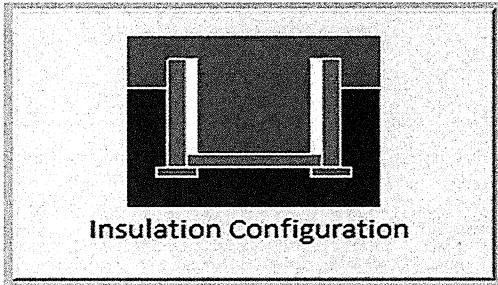
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



## Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

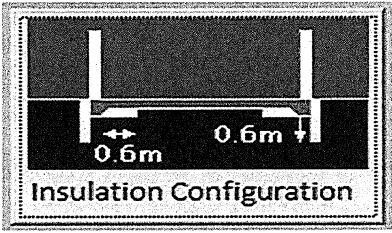
Weather Station Description		
Province:	Ontario	
Region:	Vaughan (Woodbridge)	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	4.6	 Insulation Configuration
Floor Width (m):	10.1	
Exposed Perimeter (m):	47.2	
Wall Height (m):	3.0	
Depth Below Grade (m):	1.79	
Window Area (m <sup>2</sup> ):	0.7	
Door Area (m <sup>2</sup> ):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		<b>735</b>

TYPE: 4203- THE FORESTCREST  
LO# 79977

OPT. 5 BED - WOB

## Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Vaughan (Woodbridge)	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Length (m):	1.5	 Insulation Configuration
Width (m):	10.1	
Exposed Perimeter (m):	13.1	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		162

TYPE: 4203- THE FORESTCREST  
LO# 79977

OPT. 5 BED - WOB



## Air Infiltration Residential Load Calculator

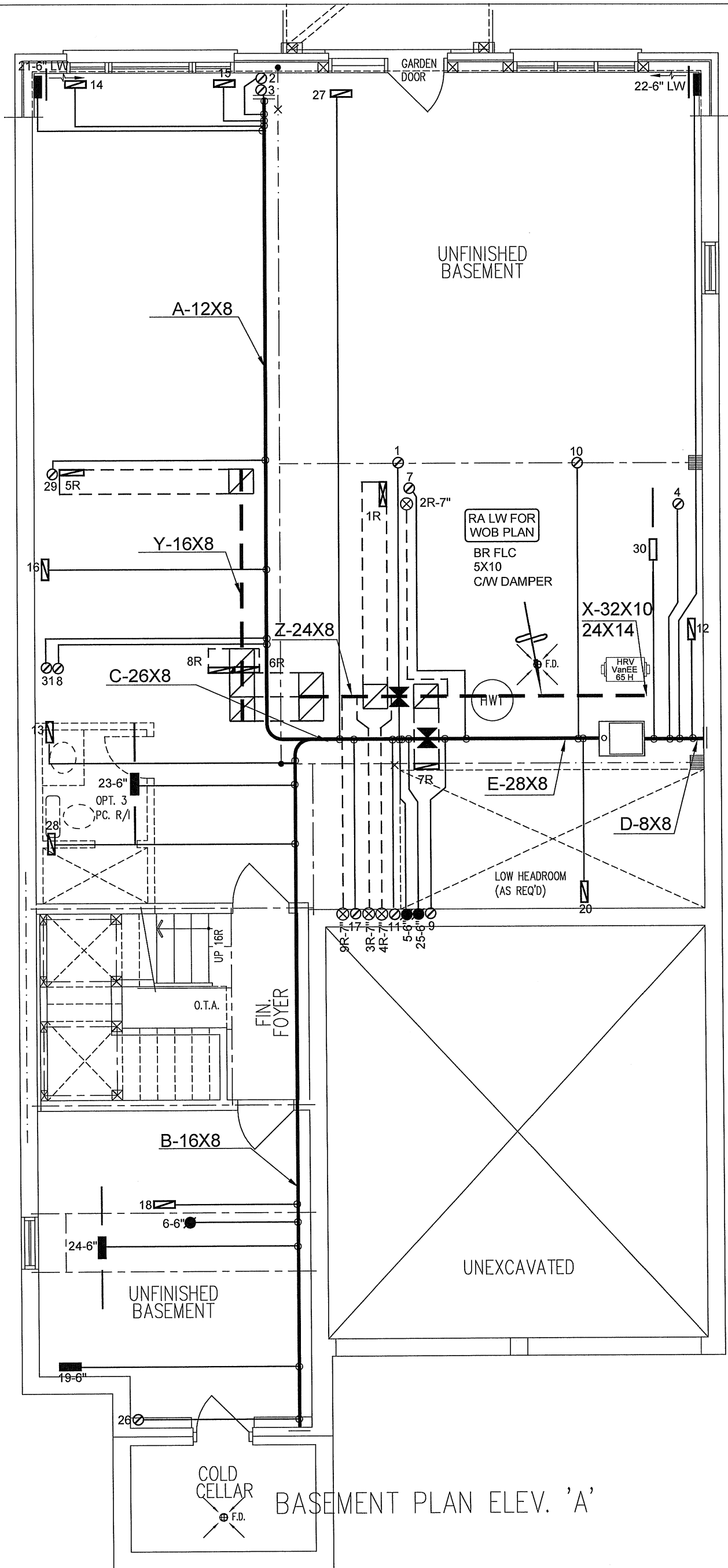
Supplemental tool for CAN/CSA-F280













Weather Station Description				
Province:	Ontario			
Region:	Vaughan (Woodbridge)			
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):	9.14			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m <sup>3</sup> ):	1563.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	2084.2 cm <sup>2</sup>		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	73.2	73.2		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.407			
Cooling Air Leakage Rate (ACH/H):	0.137			

TYPE: 4203- THE FORESTCREST  
LO# 79977

OPT. 5 BED - WOB

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



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			
								Date			

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	<div><div><div>HVACDESIGNS LTD.</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><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></div>	HEAT LOSS 77912 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title							
GOLD PARK HOMES		MAKE LENNOX	3RD FLOOR					BASEMENT HEATING LAYOUT						
Project Name		MODEL EL296UH090XE48C	2ND FLOOR		16	5	6	Date SEPT/2018						
PINE VALLEY & TESTON VAUGHAN, ONTARIO		INPUT 88 MBTU/H	1ST FLOOR		10	4	2	Scale 3/16" = 1'-0"						
OPT. 5 BED		OUTPUT 85 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					BCIN# 19669						
THE FORESTCREST - WOB		COOLING 4.0 TONS						BASEMENT		5	1	0	LO# 79977	
4203 3688 sqft		FAN SPEED 1525 cfm @ 0.6" w.g.												

CSA-F280-12

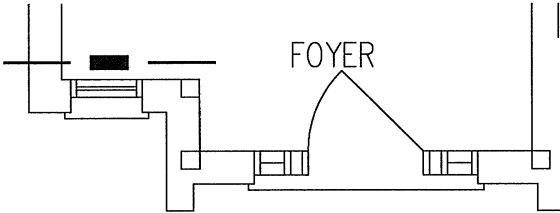
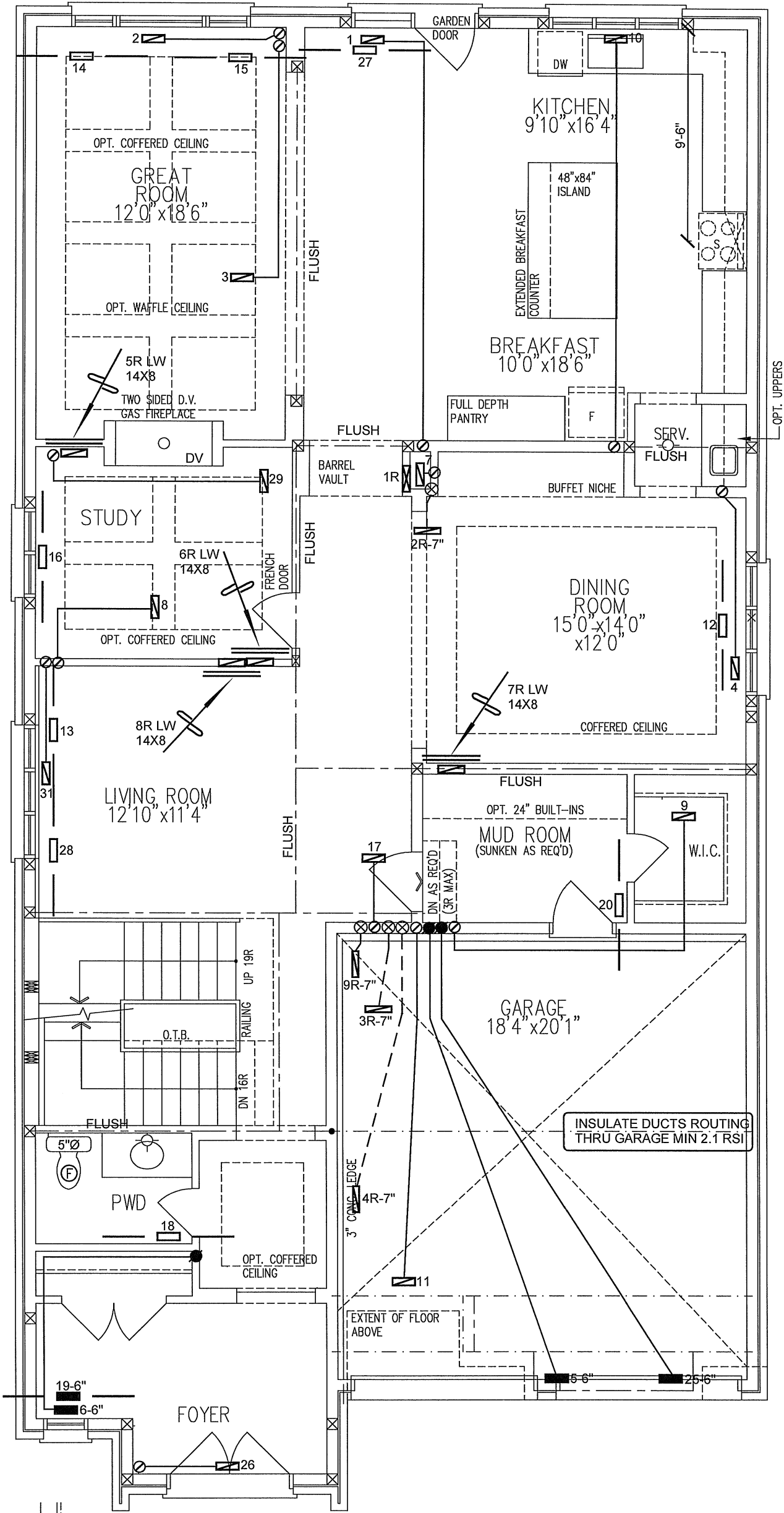
PACKAGE A1

WOB

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.

HVAC LEGEND		
SYMBOL	DESCRIPTION	
	SUPPLY AIR GRILLE	1.
	SUPPLY AIR BOOT	
	SUPPLY AIR STACK	
	SUPPLY AIR STACK 2nd FLOOR	
	RETURN AIR GRILLE	2.
	RETURN AIR STACK	
	RETURN AIR STACK 2nd FLOOR	
	REDUCER	
REVISIONS		
No.	Description	Date



PART. GROUND FLOOR PLAN ELEV. 'A' – OPT. 5 BEDROOM PLAN  
(ELEV. 'B' & 'C' SIMILAR)

GROUND FLOOR PLAN EL. 'B' & 'C'

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  
**GOLD PARK HOMES**

Project Name  
**PINE VALLEY & TESTON  
VAUGHAN, ONTARIO  
OPT. 5 BED  
THE FORESTCREST - WOB  
4203 3688 sqft**

375 Finley Ave. Suite 202 - Ajax, Ontario  
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375  
Email: info@hvacdsgns.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  
**FIRST FLOOR  
HEATING  
LAYOUT**

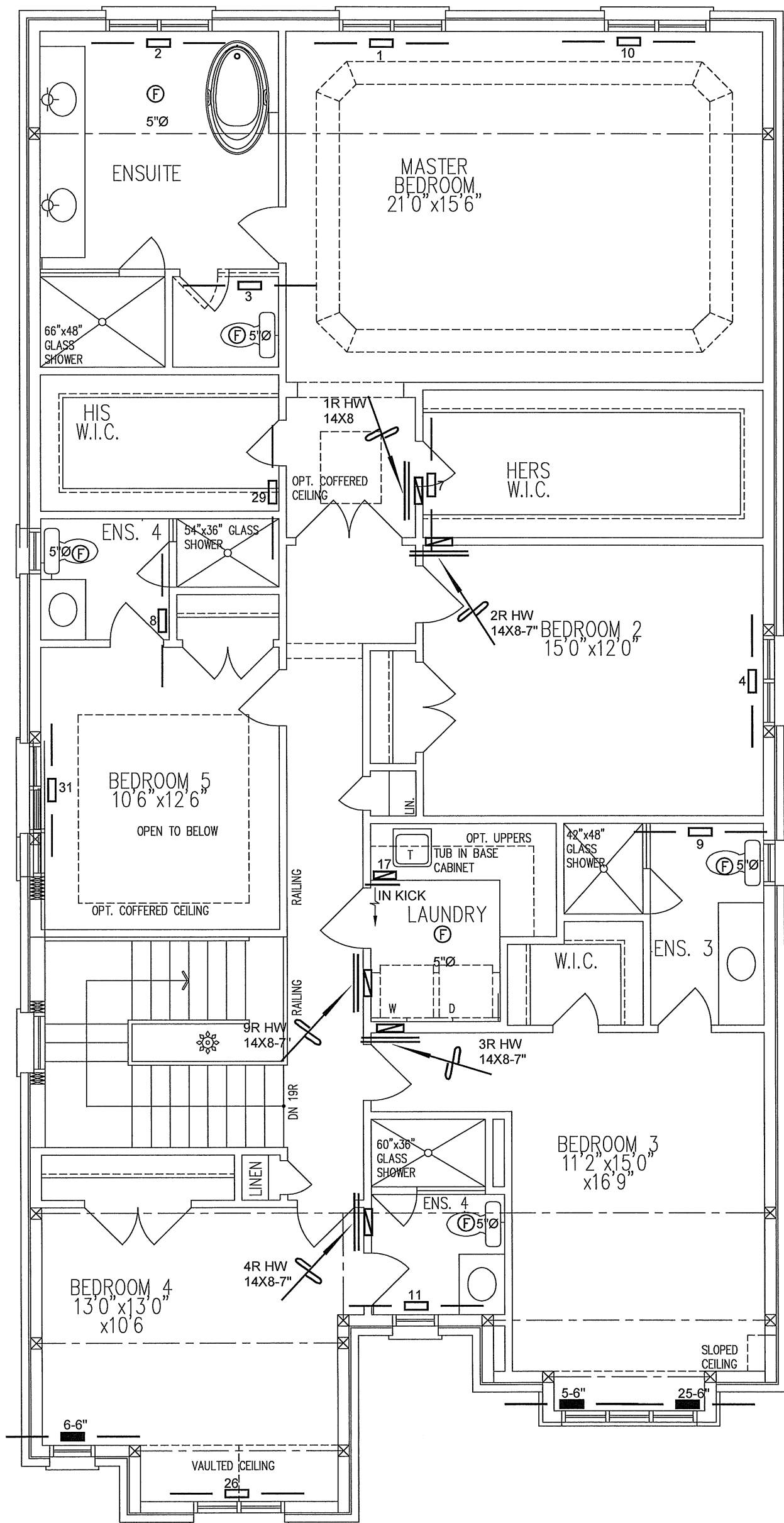
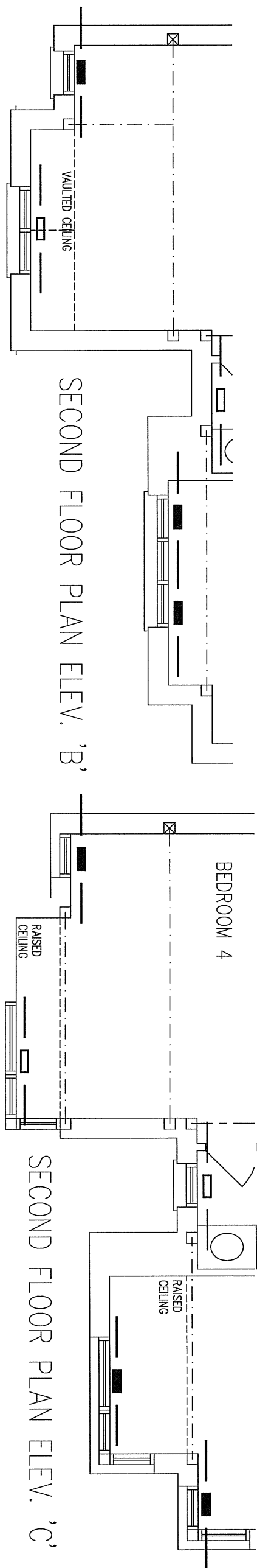
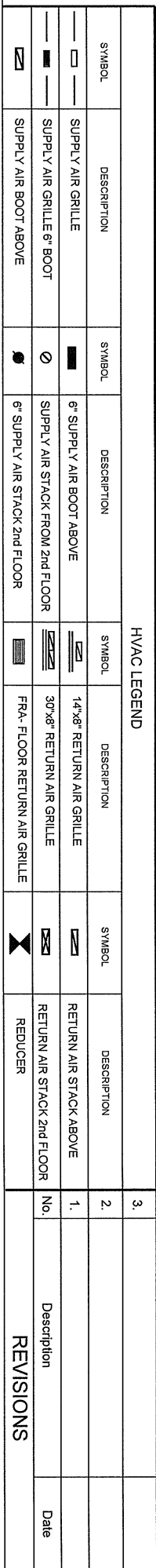
Date  
**SEPT/2018**

Scale  
**3/16" = 1'-0"**

BCIN# 19669

LO# **79977**

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



PART. SECOND FLOOR PLAN ELEV. 'A' – OPT. 5 BEDROOM PLAN  
(ELEV. 'B' & 'C' SIMILAR)

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	 <p>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</p> <p>Specializing in Residential Mechanical Design Services</p>	Sheet Title	
GOLD PARK HOMES		SECOND FLOOR HEATING LAYOUT	
Project Name		Date	SEPT/2018
PINE VALLEY & TESTON VAUGHAN, ONTARIO		Scale	3/16" = 1'-0"
OPT. 5 BED		BCIN# 19669	
THE FORESTCREST - WOB 4203 3688 sqft	<p>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.</p>	LO#	79977