


## 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 VAUGHAN (WOODBIDGE)	Postal code	Plan number/ other description		
B. Individual who reviews and takes responsibility for design activities				
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 (     )		
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]				
<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <input type="checkbox"/> House  <input type="checkbox"/> Small Buildings  <input type="checkbox"/> Large Buildings  <input type="checkbox"/> Complex Buildings </div> <div style="width: 30%;"> <input checked="" type="checkbox"/> HVAC – House  <input type="checkbox"/> Building Services  <input type="checkbox"/> Detection, Lighting and Power  <input type="checkbox"/> Fire Protection </div> <div style="width: 30%;"> <input type="checkbox"/> Building Structural  <input type="checkbox"/> Plumbing – House  <input type="checkbox"/> Plumbing – All Buildings  <input type="checkbox"/> On-site Sewage Systems </div> </div>				
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> 5005 ELEV. 'B' - KNIGHTSWOOD  OPT. 5 BED + ELEVATOR  <b>Project:</b> PINE VALLEY & TESTON		
D. Declaration of Designer				
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 10, 2018		 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: PINE VALLEY & TESTON BUILDER: GOLD PARK HOMES				OPT. 5 BED + ELEVATOR TYPE: 5005 ELEV. 'B' - KNIGHTSWOOD				DATE: Sept-18 LO# 77635				WINTER NATURAL AIR CHANGE RATE SUMMER NATURAL AIR CHANGE RATE				HEAT LOSS ΔT °F. HEAT GAIN ΔT °F.				CSA-F200-1 SB-12 PACKAGE A1				
ROOM USE		MBR		ENS		BED-5		BED-2		BED-3		BED-4		ENS-2/5		WIC-2		ENS-3		WIC-3		WIC		
EXP. WALL		46		30		14		34		36		19		9		3		4		7		6		
CLG. HT.		11		10		10		11		11		10		10		10		10		10		10		
FACTORS																								
GRS.WALL AREA		606		300		140		374		386		190		90		30		40		60				
GLAZING		LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	
NORTH	21.3	16.5	0	0	0	0	6	128	99	0	0	0	0	8	170	132	0	0	0	0	0	0	0	
EAST	21.3	42.1	0	0	0	0	0	66	1383	2737	0	1064	2106	0	0	0	0	0	0	0	20	426	842	
SOUTH	21.3	25.5	0	0	0	0	0	0	0	10	213	265	32	681	815	0	0	0	8	170	204	0	0	
WEST	21.3	42.1	50	1064	2106	34	724	1432	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
SKYL.T.	37.2	102.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
DOORS	25.2	4.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
NET EXPOSED WALL		4.5	0.9	456	2036	386	266	1187	231	134	658	116	309	1379	269	158	705	137	82	366	71	30	134	26
NET EXPOSED BSMT WALL ABOVE GR		3.6	0.7	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	480	816	286	205	283	127	255	327	188	175	225	109	249	320	185	388	177	81	104	50	40
EXPOSED FLOOR		2.7	1.3	0	0	0	0	0	0	78	214	104	18	49	24	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS		2.6	0.5	0	0	0	0	0	0	164	383	76	253	845	126	18	48	9	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	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS		3716		2174		1446		451		3191		1762		847		287		297		582		1029		399
SUB TOTAL HT GAIN			2800		1790				3344		2840		1129		284		0.20	0.32	92		323		979	
LEVEL FACTOR / MULTIPLIER		0.20	0.32	0.20	0.32	0.20	0.32	0.20	0.32	0.20	0.32	0.20	0.32	0.20	0.32	0.20	0.32	0.20	0.32	0.20	0.32	0.20	0.32	0.20
AIR CHANGE HEAT LOSS		1173		686		456			1215		1008		553		267		91		94		184		326	
AIR CHANGE HEAT GAIN			241		154		39		288		245		97		25		38		8		28		84	
DUCT LOSS		0		0		190		606		420		0		111		0		0		0		0		0
DUCT GAIN				0		141		456		401		0		32		8		0		0		0		0
HEAT GAIN PEOPLE		240		0		1		240		240		1		240		0		0		0		0		0
HEAT GAIN APPLANCES/LIGHTS			684		0		684		684		684		684		0		0		0		0		0	
TOTAL HT LOSS BTU/H		4888		2860		2092			5567		4819		2305		1225		416		390		765		1354	
TOTAL HT GAIN x 1.3 BTU/H			5467		2528		2021		6516		5733		2756		457		110		130		456		1383	

ROOM USE	LIB	DIN	KIT/IGT	CAB	LAUN	PWD	FOY	MUD	LOD	BAS
EXP. WALL	31	32	87	46	0	6	36	18	82	238
CLG. HT.	11	11	11	11	10	11	11	12	10	10
FACTORS										
LOSS										
GAIN										
GRS.WALL AREA	341	352	987	495	0	55	385	216	520	1978
GLAZING										
NORTH	21.3	16.5	0	0	0	9	192	149	0	0
EAST	21.3	42.1	0	0	0	0	0	0	0	0
SOUTH	21.3	25.5	0	0	0	0	0	0	0	0
WEST	21.3	42.1	0	0	0	0	0	0	0	0
SKYL.T.	37.2	102.5	0	0	0	0	0	0	0	0
DOORS	25.2	4.9	0	0	0	0	0	0	0	0
NET EXPOSED WALL	285	1272	248	318	1419	276	776	3463	674	369
BSMT WALL ABOVE GR	4.5	0.9	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.5	0	0	0	0	0	0	0	0
NO A/TIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.5	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS										
SLAB ON GRADE HEAT LOSS										
SUBTOTAL HT LOSS	2464	2143	7316	4886	544	507	2995	1380	1612	8373
SUB TOTAL HT GAIN	2808	1142	6787	4848	169	242	616	269	1130	10580
LEVEL FACTOR / MULT IPLIER	0.30	0.30	0.44	0.30	0.20	0.30	0.30	0.30	0.30	0.50
AIR CHANGE HEAT LOSS	1082	941	3212	2146	172	223	1315	606	280	16873
AIR CHANGE HEAT GAIN	0	98	585	418	14	21	53	23	1044	402
DUCT LOSS	0	0	0	0	72	0	0	0	203	1447
DUCT GAIN	0	0	0	0	86	0	0	0	0	0
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	684	584	684	684	684	0	0	0	0	0
TOTAL HT LOSS BTU/H	3545	3084	10527	7032	788	729	4310	1986	1612	26453
TOTAL HT GAIN x 1.3 BTU/H	4569	2502	10473	7735	1225	342	870	1269	1459	1908

TOTAL HEAT GAIN BTU/H:

**TONS: 5.08**

LOSS DUE TO VENTILATION LOAD BTU/H: 3181

STRUCTURAL HEAT LOSS: 86972

TOTAL COMBINED HEAT LOSS BTU/H: 90152

1 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.

Richard G. Runkle.

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

SITE NAME: PINE VALLEY & TESTON  
BUILDER: GOLD PARK HOMES

## OPT. 5 BED + ELEVATOR

TYPE: 5005 ELEV. 'B' - KNIGHTSWOOD DATE: Sep-18

GFA: 4412 LO# 77635

HEATING CFM 1955 COOLING CFM 1955  
TOTAL HEAT LOSS 86,972 TOTAL HEAT GAIN 60,121  
AIR FLOW RATE CFM 22.48 AIR FLOW RATE CFM 32.52EL206UH140XE60C 110  
FAN SPEED  
LOW 0  
MEDIUM 1380  
HIGH 1505  
DESIGN CFM = 1955  
CFM @ 6" E.S.P. 1885AFUE = 98 %  
INPUT (BTU/H) = 110,000  
OUTPUT (BTU/H) = 108,000

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	18	13	7
R/A	0	0	6	3	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	BED-5	BED-2	BED-3	BED-4	ENS-2/5	WIC-2	ENS-3	MBR	ENS-4	LIB	DIN	KIT/GT	KIT/GT	KIT/GT	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	2.44	2.23	2.09	1.86	2.31	2.30	1.23	0.42	0.39	2.44	0.77	1.77	3.08	2.63	2.63	2.63	0.79	0.73	4.31	1.99	3.89	3.89	3.89	3.99
CFM PER RUN HEAT	55	50	47	42	52	52	28	9	9	55	17	40	69	59	59	59	18	16	97	45	90	90	90	90
RM GAIN MBH	2.73	1.96	2.02	2.17	2.87	2.80	0.46	0.11	0.13	2.73	0.46	2.28	2.50	2.62	2.62	2.62	1.22	0.34	0.87	1.27	0.48	0.48	0.48	0.48
CFM PER RUN COOLING	89	64	66	71	93	91	15	4	4	89	15	74	81	85	85	85	40	11	28	41	16	16	16	16
ADJUSTED PRESSURE	0.15	0.16	0.16	0.16	0.15	0.15	0.16	0.16	0.16	0.15	0.16	0.16	0.15	0.15	0.15	0.15	0.16	0.16	0.15	0.16	0.15	0.15	0.15	0.15
EQUIVALENT LENGTH	200	200	170	160	160	160	200	150	170	170	150	140	103	120	140	110	200	170	210	160	150	120	103	90
TOTAL EFFECTIVE LENGTH	270	270	241	209	230	208	274	198	223	234	209	197	132	172	209	184	236	243	250	207	217	180	157	128
ADJUSTED PRESSURE	0.05	0.06	0.06	0.07	0.06	0.07	0.06	0.08	0.07	0.06	0.07	0.07	0.11	0.09	0.07	0.09	0.07	0.08	0.08	0.08	0.07	0.08	0.09	0.11
ROUND DUCT SIZE	6	5	5	5	6	6	4	4	4	6	4	5	5	5	6	6	4	4	6	4	6	6	6	5
HEATING VELOCITY (ft/min)	280	367	345	308	265	265	321	103	103	280	195	284	507	433	301	433	207	184	495	516	459	459	459	661
COOLING VELOCITY (ft/min)	454	470	485	521	474	464	172	46	46	454	172	543	595	624	433	624	459	126	143	470	82	82	82	117
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	3X10
TRUNK	D	C	C	G	F	E	C	G	G	D	E	F	E	D	B	C	G	A	F	C	A	B	D	E

RUN #	25	26	27	28	29	30	31	32	33	34	35	36	37	38
ROOM NAME	BAS	BAS	BED-2	BED-2	BED-3	BED-3	LIB	KIT/GT	CAB	CAB	CAB	WIC	ENS	BAS
RM LOSS MBH	3.99	3.99	1.86	1.86	2.31	2.31	1.77	2.63	2.34	2.34	2.34	0.52	0.63	3.99
CFM PER RUN HEAT	90	90	42	42	52	52	40	59	53	53	53	12	14	90
RM GAIN MBH	0.48	0.48	2.17	2.17	2.87	2.87	1.38	2.62	2.58	2.58	2.58	0.16	0.56	0.48
CFM PER RUN COOLING	16	16	71	71	93	93	45	85	84	84	84	5	18	16
ADJUSTED PRESSURE	0.15	0.15	0.16	0.16	0.15	0.15	0.16	0.16	0.15	0.15	0.15	0.16	0.16	0.15
EQUIVALENT LENGTH	110	150	170	160	160	160	180	120	150	130	140	180	190	140
TOTAL EFFECTIVE LENGTH	144	200	222	215	235	235	211	175	219	200	222	234	248	163
ADJUSTED PRESSURE	0.1	0.07	0.07	0.07	0.06	0.06	0.07	0.08	0.07	0.07	0.07	0.07	0.06	0.09
ROUND DUCT SIZE	5	6	5	5	6	6	5	6	6	6	6	4	4	6
HEATING VELOCITY (ft/min)	661	459	308	308	265	220	284	301	270	270	270	138	161	459
COOLING VELOCITY (ft/min)	117	82	521	521	474	330	543	433	428	428	428	57	207	82
OUTLET GRILL SIZE	3X10	4X10	3X10	3X10	4X10	4X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	4X10
TRUNK	G	F	G	G	F	F	F	B	A	A	A	C	C	E

SUPPLY AIR TRUNK SIZE										RETURN AIR TRUNK SIZE									
TRUNK	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	265	0.06	9.2	10	8	477	8	477	8	653	0.06	12.8	20	588	TRUNK O	0	0.05	0	8
TRUNK B	208	0.07	8.1	8	8	468	8	468	8	1955	0.05	20.3	38	741	TRUNK P	0	0.05	0	8
TRUNK C	728	0.06	13.4	20	8	655	8	655	8	0	0.00	0	0	0	TRUNK Q	0	0.05	0	8
TRUNK D	259	0.05	9.5	10	8	466	8	466	8	0	0.00	0	0	0	TRUNK R	0	0.05	0	8
TRUNK E	1305	0.05	17.4	28	10	671	10	671	10	0	0.00	0	0	0	TRUNK S	0	0.05	0	8
TRUNK F	401	0.06	10.7	14	8	516	8	516	8	0	0.00	0	0	0	TRUNK T	0	0.05	0	8
TRUNK G	1	2	3	4	5	6	7	8	9	0	0.00	0	0	0	TRUNK U	0	0.05	0	8
TRUNK H	0	0	0	0	0	0	0	0	0	0	0.00	0	0	0	TRUNK V	0	0.05	0	8
TRUNK I	115	135	130	115	240	200	350	320	85	0	0	0	0	0	TRUNK W	0	0.05	0	8
TRUNK J	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	TRUNK X	1490	0.05	18.3	10
TRUNK K	84	51	62	59	47	49	30	51	61	1	1	1	1	1	TRUNK Y	985	0.05	15.7	8
TRUNK L	200	135	155	185	135	140	170	195	165	0	0	0	0	0	TRUNK Z	435	0.05	11.6	8
TRUNK M	284	166	217	244	182	189	200	246	226	1	1	1	1	1	DROP	1955	0.05	20.3	18
TRUNK N	0.05	0.07	0.06	0.05	0.07	0.07	0.07	0.05	0.05	13.36	13.36	13.36	13.36	13.36					
TRUNK O	7	6.8	7	8	8.5	7.9	9.8	10.3	6	0	0	0	0	0					
TRUNK P	8	8	8	8	8	8	8	8	8	0	0	0	0	0					
TRUNK Q	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
TRUNK R	14	14	14	14	30	14	30	30	14	0	0	0	0	0					
TRUNK S																			
TRUNK T																			
TRUNK U																			
TRUNK V																			
TRUNK W																			
TRUNK X																			
TRUNK Y																			
TRUNK Z																			
DROP																			

TYPE: 5005 ELEV. 'B' - KNIGHTSWOOD  
SITE NAME: PINE VALLEY & TESTON

LO # 77535  
OPT. 5 BED + ELEVATOR

**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	FACTOR	% LOSS
155.0 CFM	X 76 F	X 1.08	X 0.25

SUPPLEMENTAL FANS		NUTONE	
Location	Model	cfm	HVI
ENS	QTXEN050C	50	✓
ENS-2/5	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

CSA F280-12 Residential Heat Loss and Heat Gain Calculations									
Formula Sheet (For Air Leakage / Ventilation Calculation)									
LO#: 77535		Model: 5005 ELEV. 'B' - KNIGHTSWOOD		Builder: GOLD PARK HOMES		Date: 9/10/2018			
Volume Calculation				Air Change & Delta T Data					
<b>House Volume</b>									
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)						
Bsmt	2052	10	20520						
First	2052	11	22572						
Second	2360	10	23600						
Third	0	9	0						
Fourth	0	9	0						
		Total:	66,692.0 ft³						
		Total:	1888.5 m³						
<b>5.2.3.1 Heat Loss due to Air Leakage</b>									
$HL_{airb} = LR_{airb} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$									
0.350	x	524.59	x	42 °C	x	1.2	=	9304 W	
								=	31747 Btu/h
<b>5.2.3.2 Heat Loss due to Mechanical Ventilation</b>									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$									
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>									
$HL_{airr} = Level Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclever} + HL_{bgclever})\}$									
		Level		Level Factor (LF)		HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)		Level Conductive Heat Loss: (HL <sub>level</sub> )	
		1		0.5		12,091		12,091	
		2		0.3		21,688		21,688	
		3		0.2		20,108		20,108	
		4		0		0		0	
		5		0		0		0	
<p>*HLairbv = Air leakage heat loss + ventilation heat loss</p> <p>*For a balanced or supply only ventilation system HLairve = 0</p>									
<b>6.2.6 Sensible Gain due to Air Leakage</b>									
$HG_{satb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$									
	x	0.124	x	524.59	x	8 °C	x	1.2	=
								=	644 W
								=	2196 Btu/h
<b>6.2.7 Sensible heat Gain due to Ventilation</b>									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$									
155 CFM	x	15 °F	x	1.08	x	0.25	=	619 Btu/h	

**HEAT LOSS AND GAIN SUMMARY SHEET**

<b>MODEL:</b>	5005 ELEV. 'B' - KNIGHTSWOOD	OPT. 5 BED + ELEVATOR	<b>BUILDER:</b>	GOLD PARK HOMES
<b>SFQT:</b>	4412	<b>LO#</b>	77535	<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)	73

**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):	66692.0	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: 77.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	238.0 ft

2012 OBC - COMPLIANCE PACKAGE		Compliance Package A1	
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	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	-

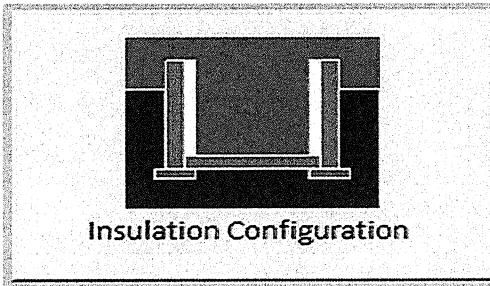
INDIVIDUAL BCIN: 19669

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):	23.5	 Insulation Configuration
Floor Width (m):	12.8	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m <sup>2</sup> ):	3.2	
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):		2453

TYPE: 5005 ELEV. 'B' - KNIGHTSWOOD    OPT. 5 BED + ELEVATOR  
LO# 77535

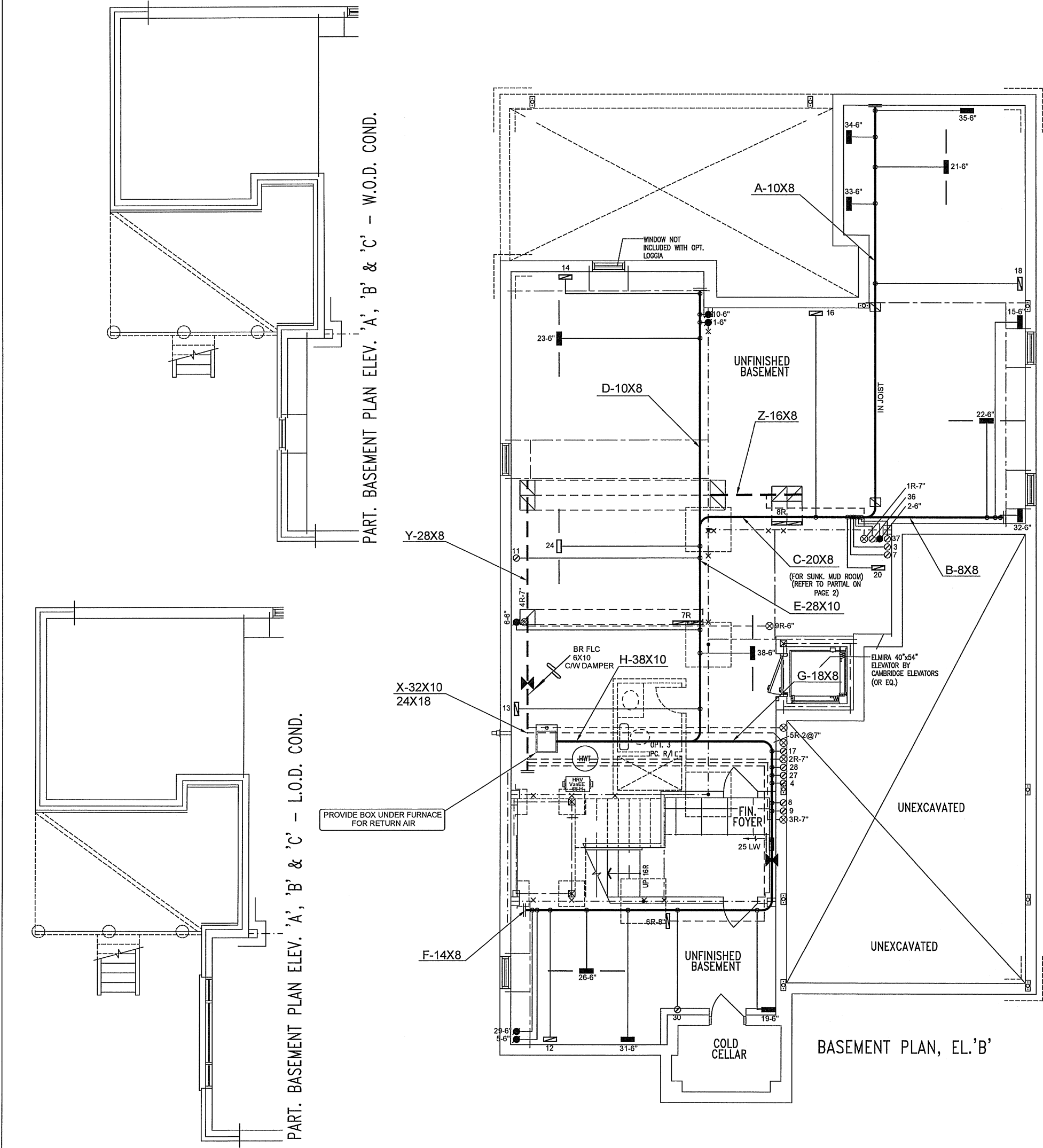
# Air Infiltration Residential Load Calculator

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):	7.32			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m <sup>3</sup> ):	1888.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	2517.4 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):	0.350			
Cooling Air Leakage Rate (ACH/H):	0.124			

TYPE: 5005 ELEV. 'B' - KNIGHTSWOOD    OPT. 5 BED + ELEVATOR  
LO# 77535





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

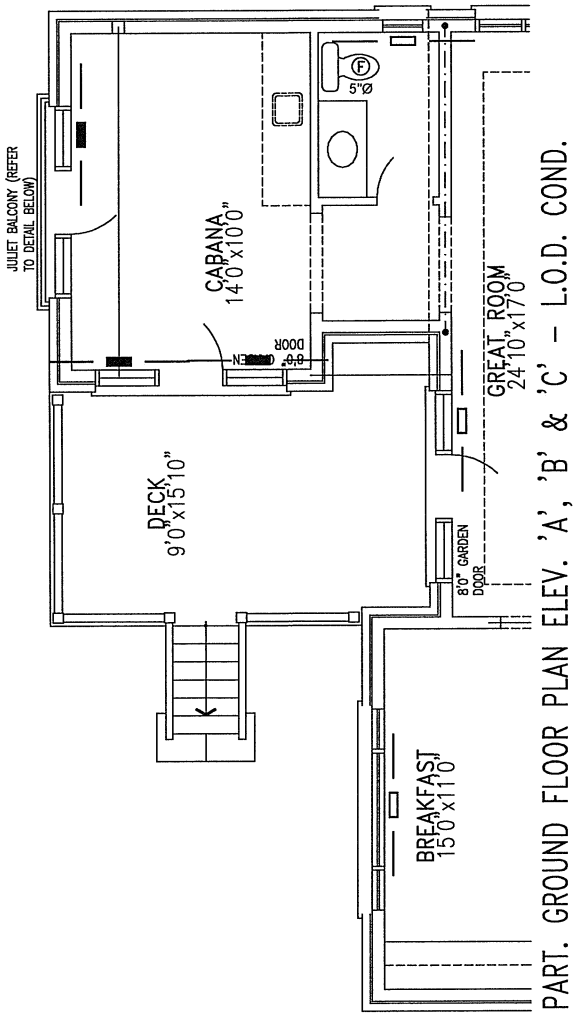
CSA-F280-12

PACKAGE A1

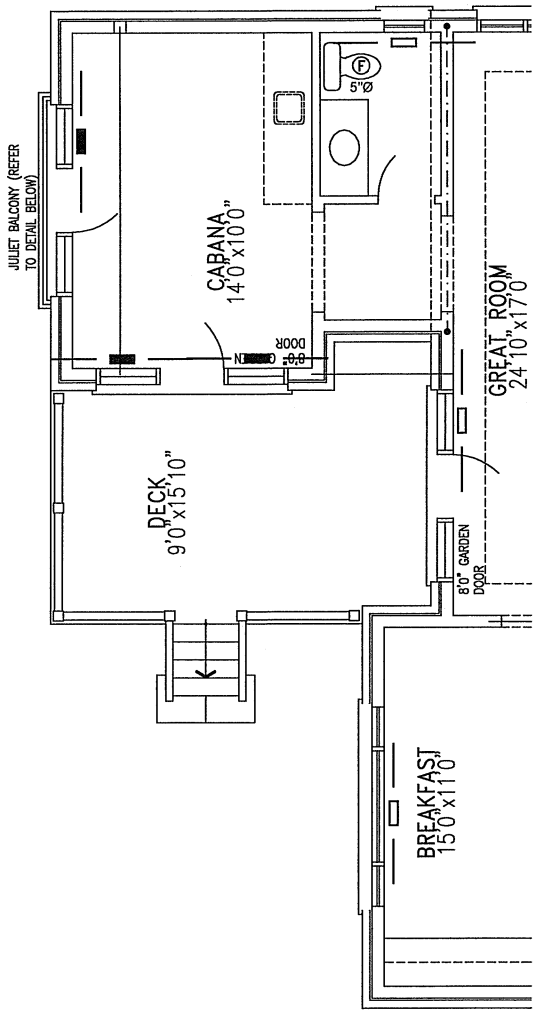
HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	DECK CONDITIONS ADDED
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8"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

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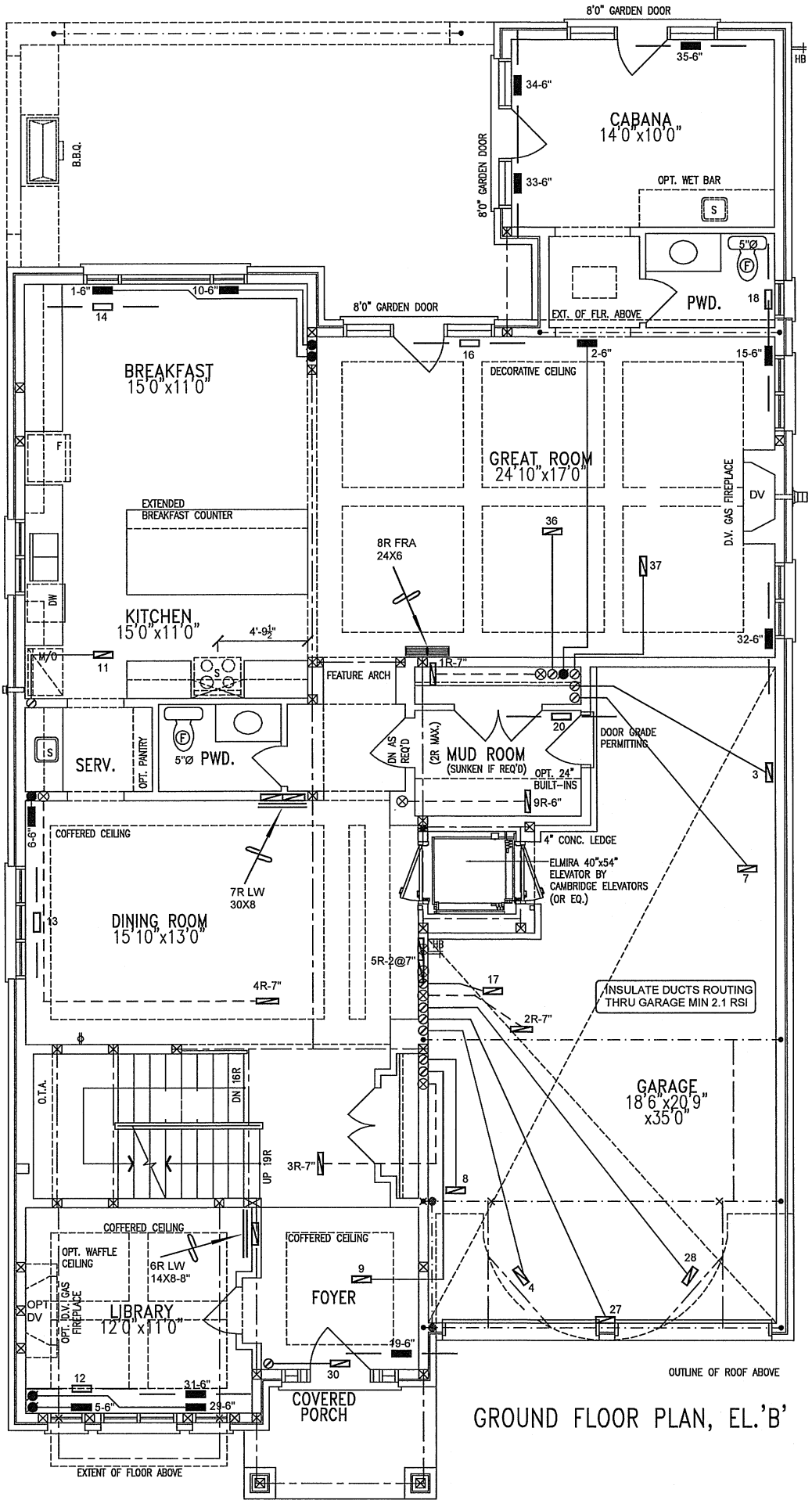
Client		<div></div> <div>375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services</div> <div>Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.</div>	HEAT LOSS 90152 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title			
GOLDPARK HOMES			MAKE LENNOX		3RD FLOOR					BASEMENT HEATING LAYOUT		
Project Name			MODEL EL296UH110XE60C		2ND FLOOR		18	6	6			
PINE VALLEY & TESTON VAUGHAN, ONTARIO			INPUT 110 MBTU/H		1ST FLOOR		13	3	3			
KNIGHTSWOOD			OUTPUT 106 MBTU/H		BASEMENT				7	1	0	Date JAN/2018
OPT. 5 BED + ELEVATOR			COOLING 5.0 TONS		ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A				Scale 1/8" = 1'-0"			
5005 ELEV. 'B' 4412 sqft			FAN SPEED 1955 cfm @ 0.6" w.c.						BCIN# 19669			
								LO#		77535		



PART. GROUND FLOOR PLAN ELEV. 'A', 'B' & 'C' - L.O.D. COND.



PART. GROUND FLOOR PLAN ELEV. 'A', 'B' & 'C' - W.O.D. COND.



GROUND FLOOR PLAN, EL.'B'

I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.3 OF THE BUILDING CODE.

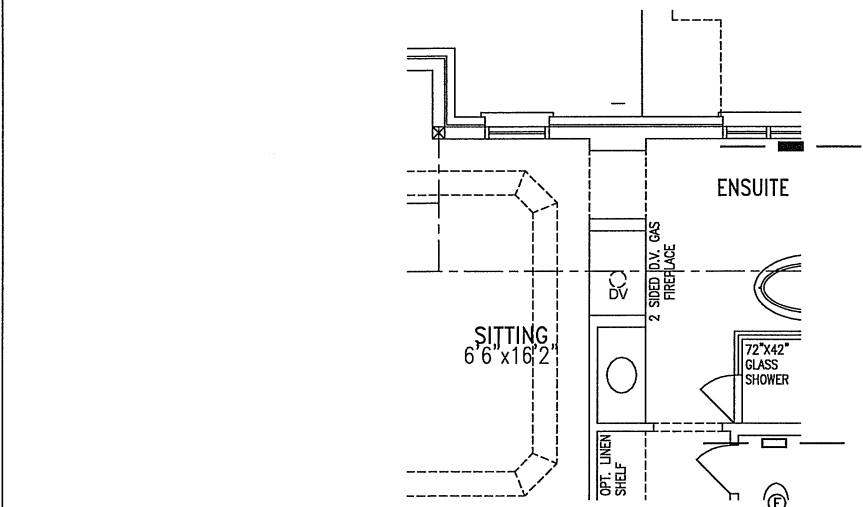
Michael O'Rourke  
Michael O'Rourke, BCIN# 19669  
HVAC DESIGNS LTD.

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PACKAGE A1

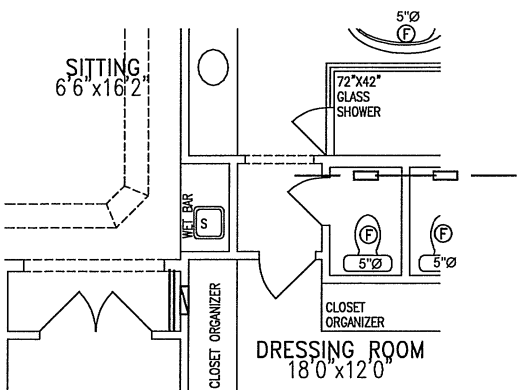
HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	DECK CONDITIONS ADDED
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8"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

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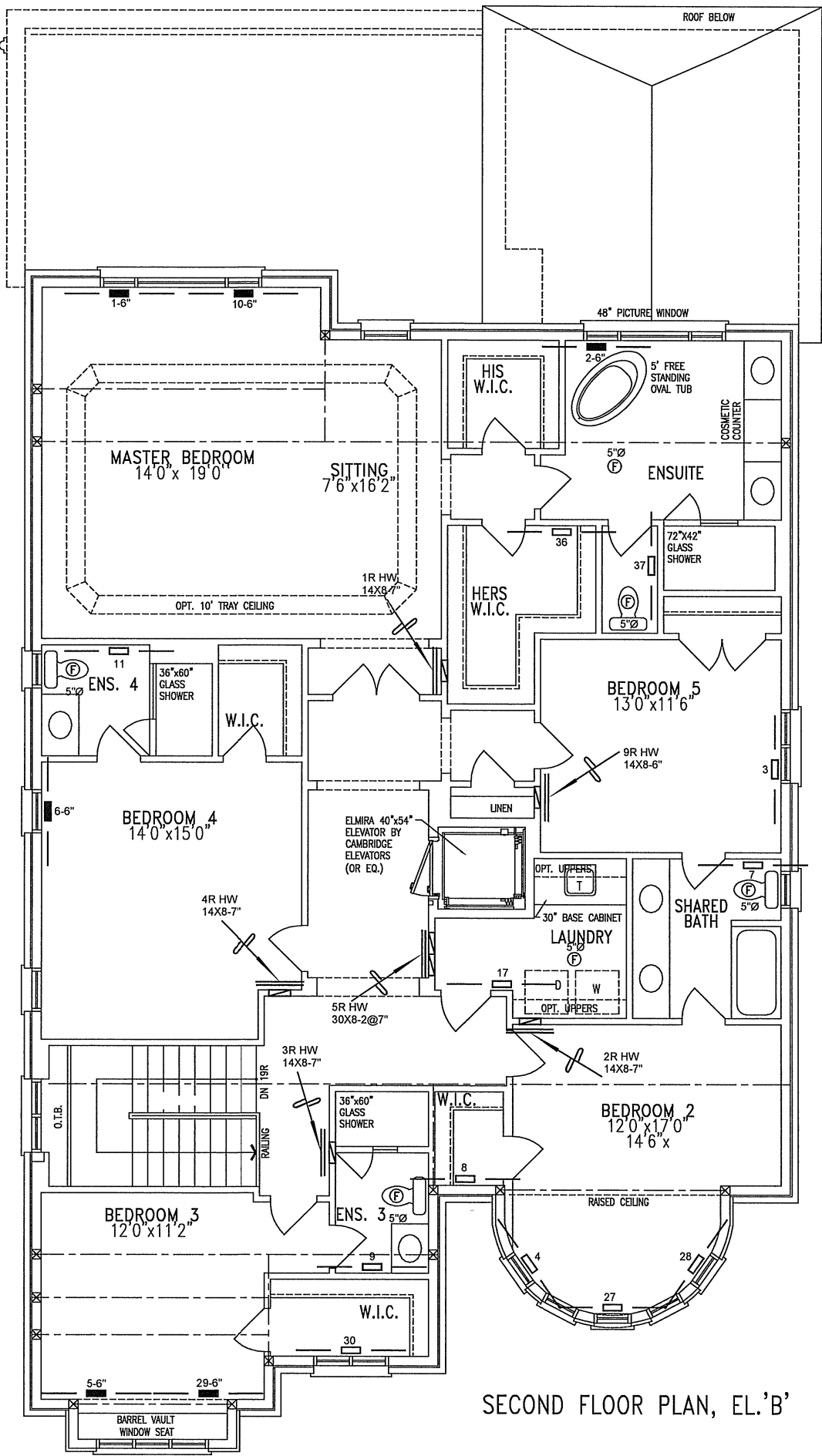
Client		<div></div> <div>375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services</div> <div>Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.</div>	Sheet Title	
GOLDPARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	JAN/2018
PINE VALLEY & TESTON VAUGHAN, ONTARIO KNIGHTSWOOD			Scale	1/8" = 1'-0"
OPT. 5 BED + ELEVATOR			BCIN# 19669	
5005 ELEV. 'B' 4412 sqft		LO#	77535	



PART. SECOND FLOOR PLAN  
OPT. SITTING AREA FIREPLACE



PART. SECOND FLOOR PLAN  
OPT. SITTING AREA WET BAR



SECOND FLOOR PLAN, EL.'B'

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

CSA-F280-12  
PACKAGE A1

HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	DECK CONDITIONS ADDED
	FLOOR 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		Date
							REVISIONS		

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GOLDPARK HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	JAN/2018
PINE VALLEY & TESTON VAUGHAN, ONTARIO KNIGHTSWOOD OPT. 5 BED + ELEVATOR 5005 ELEV. 'B' 4412 sqft			Scale	1/8" = 1'-0"
			BCIN# 19669	
			LO#	77535