


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 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@hvacdesigns.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]			
<div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings </div> <div> <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> <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 HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12		Model: 5005 - LOT 93 - OPT. 5 BED THE KNIGHTSWOOD Project: PINE VALLEY & TESTON	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</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.			
November 2, 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.

Application for a Permit Construct or Demolish – Effective January 1, 2015

SITE NAME: PINE VALLEY & TESTON			THE KNIGHTSWOOD			DATE: Nov-18			WINTER NATURAL AIR CHANGE RATE			HEAT LOSS AT °F.			CSA-F280-12		
BUILDER: GOLD PARK HOMES			TYPE: 5005 - LOT 93 - OPT. 5 BED			LO# 80577			SUMMER NATURAL AIR CHANGE RATE			HEAT GAIN AT °F.			SB-12 PACKAGE A1		
			GFA: 4380														
ROOM USE	MBR	ENS	BED-5	BED-2	BED-3	BED-4	ENS-2	WIC-2	ENS-3	ENS-4	WIC-3	HERS					
EXP. WALL CLG. HT.	46	30	13	36	36	19	6	3	4	7	14	6					
FACTORS	11	10	10	11	10	10	10	10	10	10	10	10					
GRS.WALL AREA	506	300	130	396	360	190	60	30	40	70	140	60					
GLAZING	LOSS	GAIN	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS					
NORTH	0	0	17	0	0	0	8	0	0	0	0	0					
EAST	0	0	0	65	1064	2078	0	0	0	0	20	428					
SOUTH	0	0	0	0	10	213	249	49	1043	1220	0	0					
WEST	50	1064	0	0	0	0	0	0	0	0	0	0					
SKYL.T.	37.2	101.5	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					
NET EXPOSED WALL	4.5	0.8	113	504	85	331	1477	249	300	1339	225	141					
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.6	0	0	0	0	0	0	0	0	0	0					
EXPOSED CLG	1.3	0.6	247	317	145	225	289	132	60	77	35	40					
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	78	214	98	18	49	23	60					
EXPOSED FLOOR	2.6	0.4	154	393	66	253	645	109	18	46	8	0					
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0	0	0	153	26	40					
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0	0					
SUBTOTAL HT LOSS	3783	2194	1576	3945	3031	2126	632	287	297	582	1029	322					
SUB TOTAL HT GAIN	2734	1743	568	3259	2729	1534	228	63	84	307	952	0.20					
LEVEL FACTOR / MULTIPLIER	0.20	0.34	0.20	0.34	0.20	0.34	0.20	0.34	0.20	0.34	0.20	0.34					
AIR CHANGE HEAT LOSS	1278	741	532	1332	1024	718	214	97	100	196	348	109					
AIR CHANGE HEAT GAIN	203	130	42	242	203	114	17	5	6	23	71	5					
DUCT LOSS	0	0	211	528	405	0	85	38	0	0	0	0					
DUCT GAIN	0	0	159	448	391	0	24	7	0	0	0	0					
HEAT GAIN PEOPLE	240	0	1	240	240	1	0	0	0	0	0	0					
HEAT GAIN APPLIANCES/LIGHTS	739	0	739	739	739	739	0	0	0	0	0	0					
TOTAL HT LOSS BTU/H	5061	2935	2319	5805	4460	2844	930	423	397	778	1377	430					
TOTAL HT GAIN x 1.3 BTU/H	5403	2434	2272	6407	5592	3415	350	97	118	429	1330	97					
ROOM USE	LIB	DIN	KIT/GT	CAB	LAUN	PWD	FOY	MUD	HIS	LOD	BAS						
EXP. WALL CLG. HT.	31	32	87	45	0	5	35	18	0	52	238						
FACTORS	11	11	11	11	10	11	11	12	10	10	10						
GRS.WALL AREA	341	352	957	495	0	55	385	216	0	520	1978						
GLAZING	LOSS	GAIN	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS						
NORTH	0	0	46	0	0	9	0	0	0	0	0						
EAST	55	1192	2327	0	0	0	23	596	1163	0	0						
SOUTH	0	0	20	63	1341	0	0	0	0	0	0						
WEST	0	0	115	63	1341	0	0	0	0	0	0						
SKYL.T.	37.2	101.5	0	0	0	0	0	0	0	22	468						
DOORS	25.2	4.3	0	0	0	0	0	0	0	0	0						
NET EXPOSED WALL	4.5	0.8	776	369	0	46	329	707	119	0	0						
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.6	0	0	0	0	0	0	0	0	0						
EXPOSED CLG	1.3	0.6	0	0	102	0	41	53	24	0	0						
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0	0						
EXPOSED FLOOR	2.6	0.4	0	0	56	0	0	0	0	0	0						
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	143	0	0	0	0	0	0						
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0						
SUBTOTAL HT LOSS	2464	2143	7315	4886	274	507	2824	1380	77	1512	10983						
SUB TOTAL HT GAIN	2541	1086	6595	4719	84	229	1554	232	35	1090	659						
LEVEL FACTOR / MULTIPLIER	0.30	0.47	0.30	0.47	0.20	0.34	0.30	0.47	0.20	0.34	0.50						
AIR CHANGE HEAT LOSS	1169	1017	3471	2319	92	240	1340	655	26	17018	136						
AIR CHANGE HEAT GAIN	189	81	491	351	6	17	116	17	3	0	0						
DUCT LOSS	0	0	0	0	37	0	0	0	0	0	0						
DUCT GAIN	0	0	0	0	83	0	0	0	0	0	0						
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	0	0	0						
HEAT GAIN APPLIANCES/LIGHTS	739	739	739	739	739	747	4164	2034	103	1512	28011						
TOTAL HT LOSS BTU/H	3633	3159	10786	7205	403	747	4164	2034	103	1512	28011						
TOTAL HT GAIN x 1.3 BTU/H	4510	2477	10171	7552	1186	319	2170	325	49	1417	1986						

TOTAL HEAT GAIN BTU/H:

TONS: 5.05

LOSS DUE TO VENTILATION LOAD BTU/H: 3181

STRUCTURAL HEAT LOSS: 89514

TOTAL COMBINED HEAT LOSS BTU/H: 92695

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

THE KNIGHTSWOOD
TYPE: 5005 - LOT 93 - OPT. 5 BED DATE: Nov-18

GFA: 4380 LO# 80577

HEATING CFM		1955	COOLING CFM		1955	furnace filter		0.08	^LENNOX		AFUE = 96 %	
TOTAL HEAT LOSS		89,514	TOTAL HEAT GAIN		60,107	a/c coil pressure		0.2	EL296UH110XE50C		INPUT (BTU/H) = 110,000	
AIR FLOW RATE CFM		21.84	AIR FLOW RATE CFM		32.53	available pressure			FAN SPEED		OUTPUT (BTU/H) = 106,000	
RUN COUNT		4th	3rd	2nd	1st	Bas	for s/a & r/a		0.32	LOW		0
S/A		0	0	0	20	13	plenum pressure s/a		0.17	MEDIUM		1380
R/A		0	0	0	6	3	max s/a dfr press. loss		0.02	MEDIUM		1505
							min adjusted pressure s/a		0.15	HIGH		1685
							r/a grille press. loss		0.02	HIGH		1955
							adjusted pressure r/a		0.13	TEMPERATURE RISE		50
												°F

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

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

All S/A runs 5/8" unless noted otherwise on layout.

ROOM NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
MBR	2.53	2.27	2.32	1.93	2.23	2.23	1.42	0.93	0.42	0.40	2.53	0.78	1.82	3.16	2.70	2.70	2.70	0.40	0.75	1.6	2.03	4.22	4.22	4.22
RM LOSS MBH	55	50	51	42	49	31	20	9	9	55	17	40	69	59	59	59	9	16	91	44	92	92	92	92
CFM PER RUN HEAT	2.70	1.92	2.27	2.14	2.80	1.71	0.35	0.10	0.12	2.70	0.43	2.25	2.48	2.54	2.54	2.54	1.19	0.32	2.17	0.32	0.49	0.49	0.49	0.49
RM GAIN MBH	88	62	74	69	91	56	11	3	4	88	14	73	81	83	83	83	39	10	71	11	16	16	16	16
CFM PER RUN COOLING	0.15	0.16	0.16	0.16	0.15	0.16	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
ADJUSTED PRESSURE	0.06	0.06	0.07	0.07	0.06	0.08	0.06	0.06	0.06	0.07	0.06	0.07	0.08	0.11	0.09	0.07	0.09	0.07	0.06	0.06	0.07	0.08	0.09	0.11
EQUVALENT LENGTH	190	200	170	160	160	160	200	200	150	170	150	140	103	120	140	110	200	170	210	160	150	120	103	90
TOTAL EFFECTIVE LENGTH	260	270	223	209	230	208	247	198	223	234	209	197	132	172	209	164	236	243	250	207	217	180	157	128
ADJUSTED PRESSURE	0.06	0.06	0.07	0.07	0.06	0.08	0.06	0.06	0.06	0.07	0.06	0.07	0.08	0.11	0.09	0.07	0.09	0.07	0.06	0.06	0.07	0.08	0.09	0.11
ROUND DUCT SIZE	6	5	6	5	6	5	4	4	4	6	4	5	6	6	6	6	4	4	6	4	6	6	6	6
HEATING VELOCITY (ft/min)	280	367	260	308	250	228	229	103	103	280	195	294	352	301	301	301	103	184	464	505	469	469	469	469
COOLING VELOCITY (ft/min)	449	455	377	507	464	411	126	34	46	449	161	536	413	423	423	423	447	115	362	126	82	82	82	82
OUTLET GRILL SIZE	4X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	C	E	G	F	E	E	G	G	D	E	F	E	E	D	C	G	A	F	C	A	B	D	E

ROOM NAME	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
MBR	4.22	4.22	1.93	1.93	2.23	2.23	1.38	2.70	2.40	2.40	2.40	0.43	0.67	4.22	1.42	0.10
RM LOSS MBH	92	92	42	42	49	49	30	59	52	52	52	9	15	92	31	2
CFM PER RUN HEAT	0.49	0.49	2.14	2.14	2.80	2.80	1.33	2.25	2.52	2.52	2.52	0.10	0.52	0.49	1.71	0.05
RM GAIN MBH	16	16	69	69	91	91	43	73	82	82	82	3	17	16	56	2
CFM PER RUN COOLING	0.15	0.15	0.16	0.16	0.15	0.15	0.16	0.15	0.15	0.15	0.15	0.16	0.16	0.15	0.16	0.16
ADJUSTED PRESSURE	0.15	0.15	0.16	0.16	0.15	0.15	0.16	0.15	0.15	0.15	0.15	0.16	0.16	0.15	0.16	0.16
EQUVALENT LENGTH	140	150	170	160	160	160	190	120	150	130	140	200	190	140	190	210
TOTAL EFFECTIVE LENGTH	144	200	222	215	235	248	211	175	219	201	222	256	248	163	238	270
ADJUSTED PRESSURE	0.1	0.07	0.07	0.07	0.06	0.06	0.06	0.07	0.08	0.07	0.07	0.06	0.06	0.09	0.07	0.06
ROUND DUCT SIZE	6	6	5	5	6	5	5	6	6	6	6	4	4	6	5	4
HEATING VELOCITY (ft/min)	469	489	308	308	250	220	284	301	265	265	265	103	172	469	228	23
COOLING VELOCITY (ft/min)	82	82	507	507	464	411	126	34	46	449	161	536	413	423	423	423
OUTLET GRILL SIZE	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10
TRUNK	G	F	G	G	F	F	F	B	A	A	A	C	C	E	E	C

TRUNK	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 CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	0.06	9.2	10	475	636	0.06	12.7	18	8	636	0.06	12.7	18	8	636	0.06	12.7	18	8
TRUNK B	0.07	8.1	8	475	1955	0.06	19.4	34	10	828	0.06	19.4	34	10	828	0.06	19.4	34	10
TRUNK C	0.06	12.8	20	588	TRUNK I	0.00	0	0	8	0	0.00	0	0	8	0	0.00	0	0	8
TRUNK D	0.06	9.1	10	470	TRUNK J	0.00	0	0	8	0	0.00	0	0	8	0	0.00	0	0	8
TRUNK E	0.06	16.7	32	741	TRUNK K	0.00	0	0	8	0	0.00	0	0	8	0	0.00	0	0	8
TRUNK F	0.06	10.6	14	503	TRUNK L	0.00	0	0	8	0	0.00	0	0	8	0	0.00	0	0	8

RETURN AIR #	1	2	3	4	5	6	7	8	9	BR														
AIR VOLUME	0	0	0	0	260"	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PLENUM PRESSURE	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	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
ACTUAL DUCT LGH.	84	51	62	59	47	49	30	51	48	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	200	165	155	185	135	140	170	195	175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	284	216	217	244	182	189	200	246	223	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.05	0.06	0.06	0.05	0.07	0.07	0.07	0.05	0.06	13.36	13.36	13.36	13.36	13.36	13.36	13.36	13.36	13.36	13.36	13.36	13.36	13.36	13.36	13.36
ROUND DUCT SIZE	7	7	7	7	8.8	6.8	10.1	10.1	10.1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
INLET GRILL SIZE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	30	14	30	30	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
						</																		

TYPE: 5005 - LOT 93 - OPT. 5 BED
SITE NAME: PINE VALLEY & TESTON

LO # 80577
THE KNIGHTSWOOD

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	6 @ 10.6 cfm	63.6 cfm
Table 9.32.3.A.	TOTAL	222.6 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	222.6	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	67.6	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	$\Delta T \cdot F$	FACTOR	% LOSS
155.0 CFM	X 76 F	X 1.08	X 0.25


SUPPLEMENTAL FANS		NUTONE	
Location	Model	cfm	HVI
ENS	QTXEN050C	50	<input checked="" type="checkbox"/>
ENS-2	QTXEN050C	50	<input checked="" type="checkbox"/>
ENS-4	QTXEN050C	50	<input checked="" type="checkbox"/>
PWD	QTXEN050C	50	<input checked="" type="checkbox"/>

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:	
HRAI #	001820
Date:	November-18

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																									
Formula Sheet (For Air Leakage / Ventilation Calculation)																																									
LO#: 80577		Model: 5005 - LOT 93 - OPT. 5 BED		Builder: GOLD PARK HOMES		Date: 02/11/2018																																			
Volume Calculation																																									
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> <tr> <td>Bsmt</td> <td>2020</td> <td>10</td> <td>20200</td> </tr> <tr> <td>First</td> <td>2020</td> <td>11</td> <td>22220</td> </tr> <tr> <td>Second</td> <td>2360</td> <td>10</td> <td>23600</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>66,020.0 ft³</td> </tr> <tr> <td colspan="2">Total:</td> <td></td> <td>1869.5 m³</td> </tr> </table>										Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	2020	10	20200	First	2020	11	22220	Second	2360	10	23600	Third	0	9	0	Fourth	0	9	0	Total:			66,020.0 ft³	Total:			1869.5 m³
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																						
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Total:			66,020.0 ft³																																						
Total:			1869.5 m³																																						
Air Change & Delta T Data																																									
WINTER NATURAL AIR CHANGE RATE		0.379		SUMMER NATURAL AIR CHANGE RATE		0.127																																			
<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								
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			76																																						
			13																																						
6.2.6 Sensible Gain due to Air Leakage																																									
$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$																																									
0.379		x	519.30	x	7 °C	x	1.2	=	565 W																																
								=	1926 Btu/h																																
6.2.7 Sensible heat Gain due to Ventilation																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																									
155 CFM		x	13 °F	x	1.08	x	0.25	=	536 Btu/h																																
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																									
$HL_{airr} = Level Factor \times HL_{airbv} \times \{(HL_{ager} + HL_{pgr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																									
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>Hlaire Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{devel})</th> <th>Air Leakage Heat Loss Multiplier (LF x Hlairebv / HL_{level})</th> </tr> <tr> <td>1</td> <td>0.5</td> <td rowspan="5">34,035</td> <td>12,505</td> <td>1.361</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>21,517</td> <td>0.475</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>20,153</td> <td>0.338</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)	Hlaire Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{devel})	Air Leakage Heat Loss Multiplier (LF x Hlairebv / HL _{level})	1	0.5	34,035	12,505	1.361	2	0.3	21,517	0.475	3	0.2	20,153	0.338	4	0	0	0.000	5	0	0	0.000						
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4	0		0	0.000																																					
5	0		0	0.000																																					
<p>*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0</p>																																									

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5005 - LOT 93 - OPT. 5 BED	THE KNIGHTSWOOD	BUILDER: GOLD PARK HOMES
SFQT: 4380	LO# 80577	SITE: 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):	66020.0	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

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	-

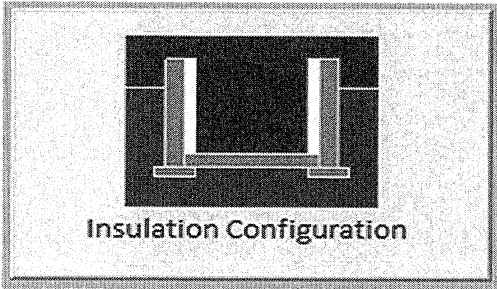
INDIVIDUAL BCIN: 19669

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):	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 ²):	3.2	
Door Area (m ²):	3.7	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		2426

TYPE: 5005 - LOT 93 - OPT. 5 BED
LO# 80577

THE KNIGHTSWOOD

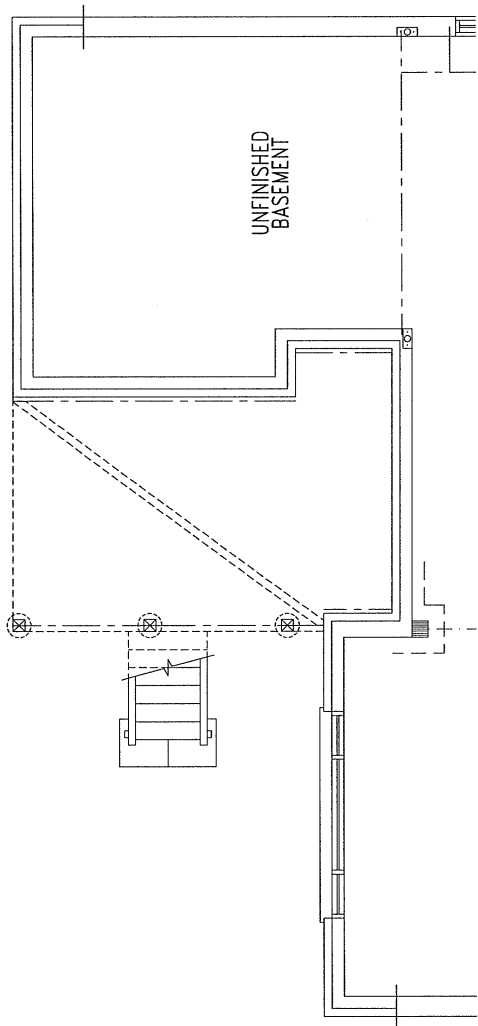
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

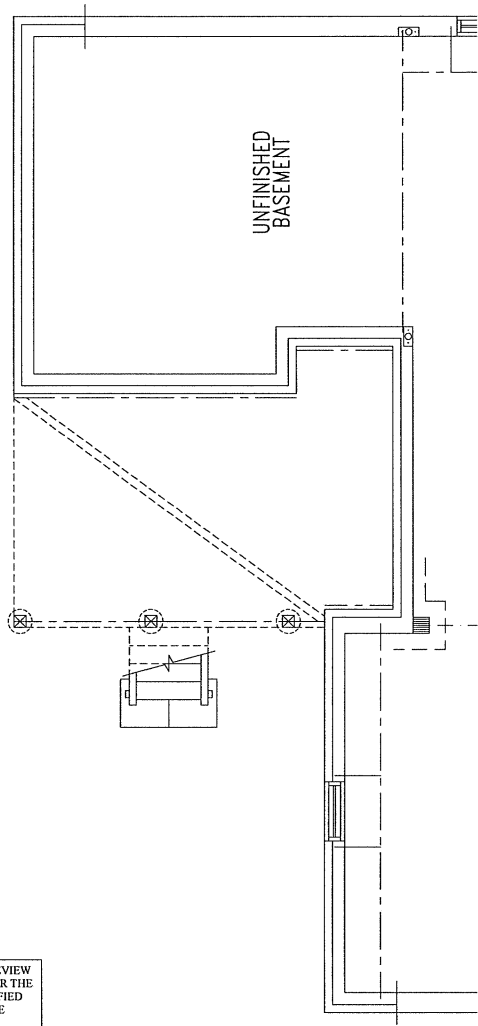
Weather Station Description				
Province:	Ontario			
Region:	Vaughan (Woodbridge)			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	8.23			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1869.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	2492.1 cm ²		
	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):	0.379			
Cooling Air Leakage Rate (ACH/H):	0.127			

TYPE: 5005 - LOT 93 - OPT. 5 BED
LO# 80577

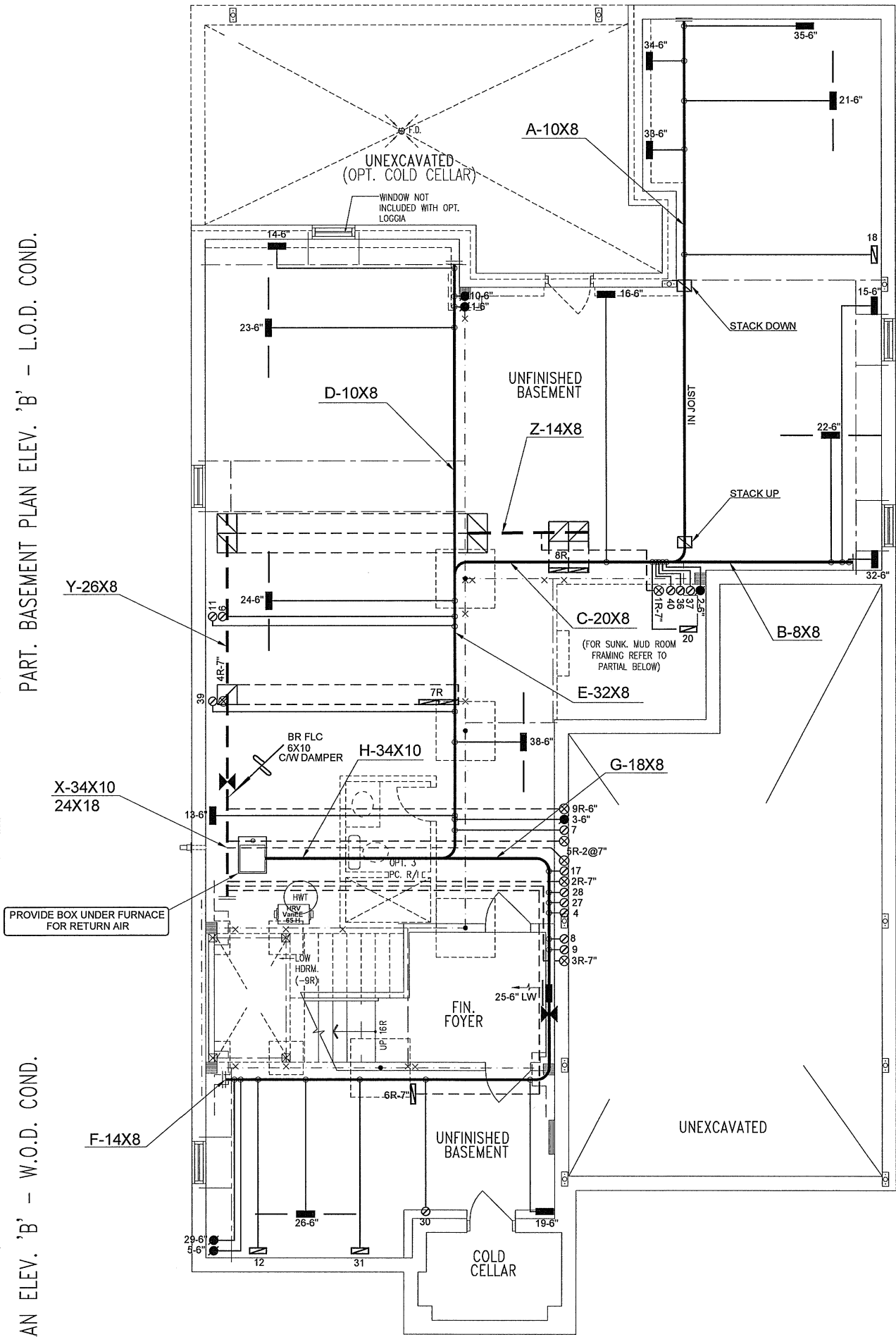
THE KNIGHTSWOOD



PART. BASEMENT PLAN ELEV. 'B' - L.O.D. COND.



PART. BASEMENT PLAN ELEV. 'B' - W.O.D. COND.



BASEMENT PLAN ELEV. 'B' - LOT 93

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.

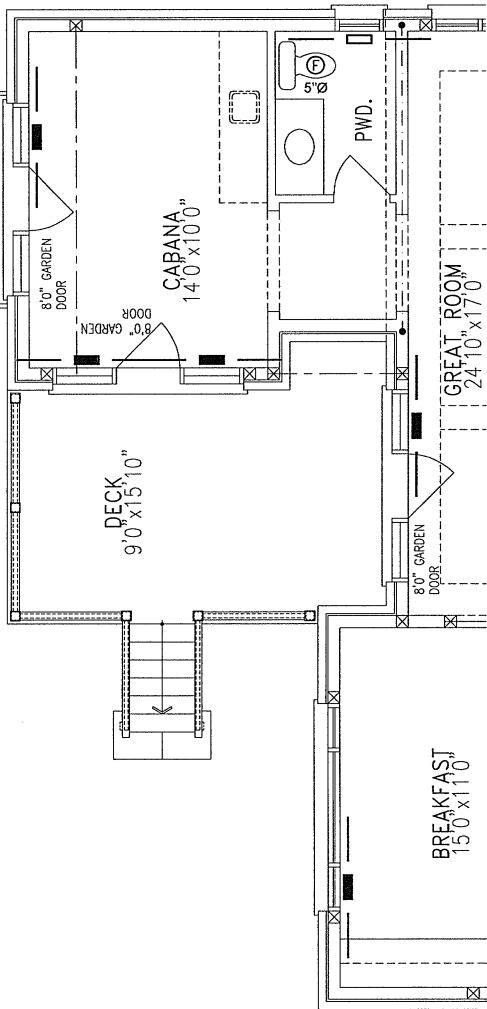
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

LOT 93
CSA-F280-12
PACKAGE A1

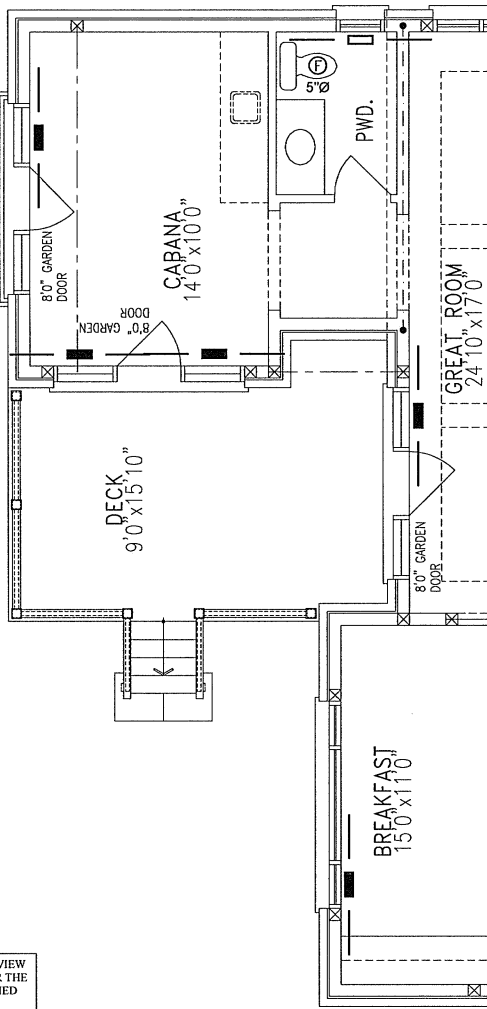
HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		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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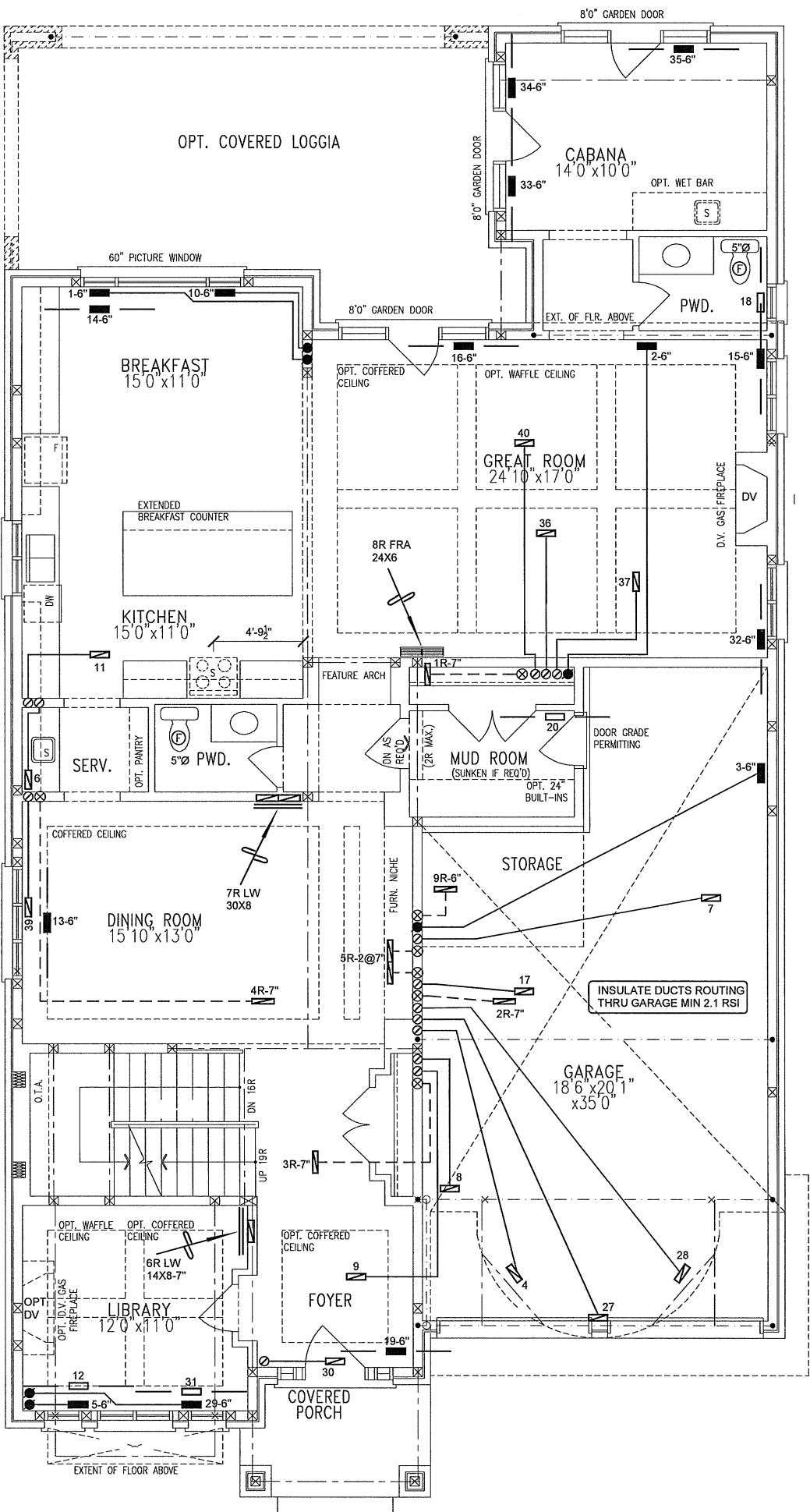
Client		<div></div> <div>375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services</div>	HEAT LOSS 92695 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title	
GOLDPARK HOMES			MAKE LENNOX	3RD FLOOR				BASEMENT HEATING LAYOUT	
Project Name PINE VALLEY & TESTON VAUGHAN, ONTARIO KNIGHTSWOOD			MODEL EL296UH110XE60C	2ND FLOOR	20	6	6		
OPT. 5 BED			INPUT 110 MBTU/H	1ST FLOOR	13	3	3		
5005 - LOT 93			OUTPUT 106 MBTU/H	BASEMENT	7	1	0	Date	NOV/2018
4380 sqft		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"	
		FAN SPEED 1955 cfm @ 0.6" w.c.					BCIN# 19669		
						LO#		80577	



PART. GROUND FLOOR PLAN ELEV. 'B' - L.O.D. COND.



PART. GROUND FLOOR PLAN ELEV. 'B' - W.O.D. COND.



GROUND FLOOR PLAN ELEV. 'B' - LOT 93

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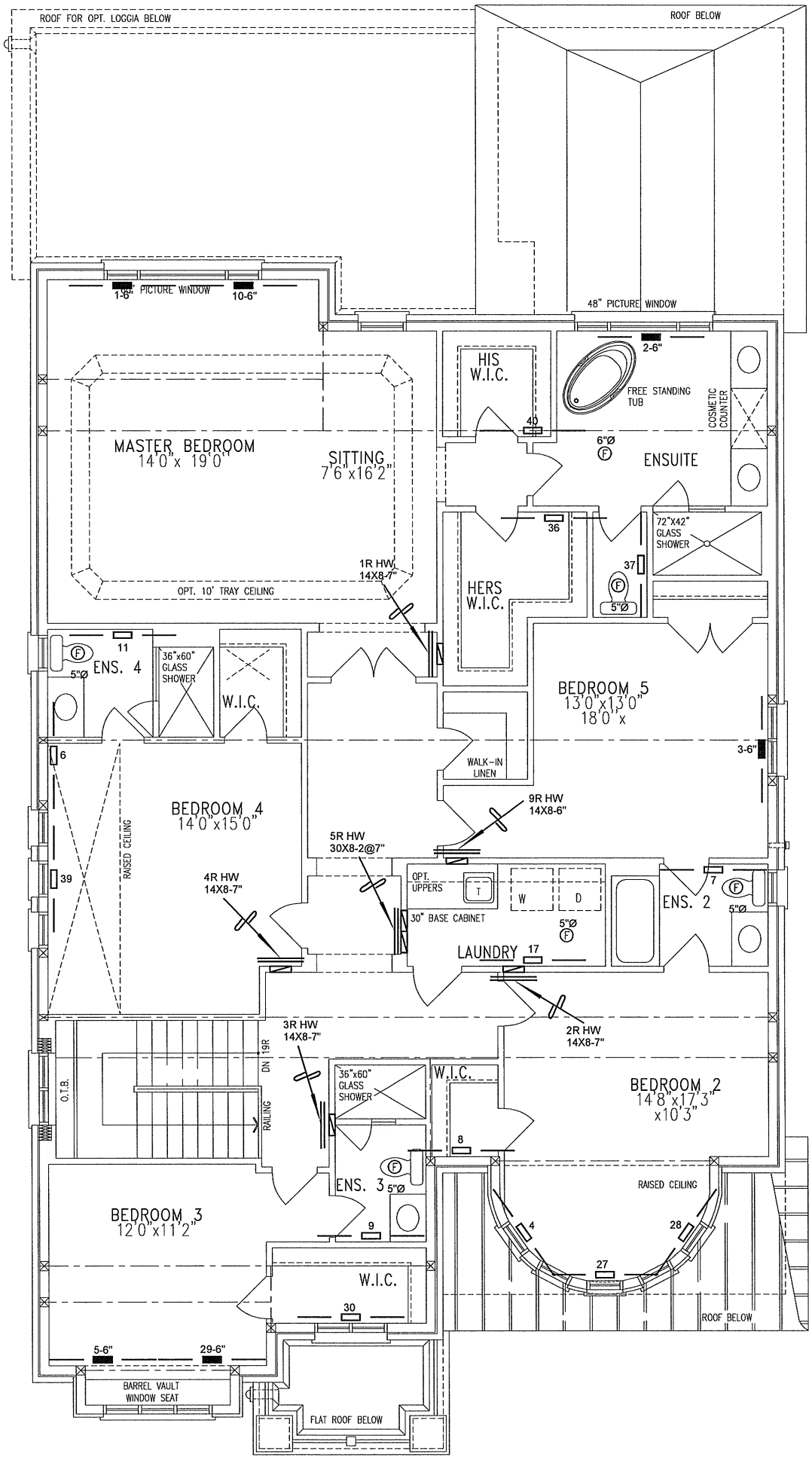
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

LOT 93
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.	
	FLOOR 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		<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	NOV/2018
PINE VALLEY & TESTON VAUGHAN, ONTARIO KNIGHTSWOOD OPT. 5 BED 5005 - LOT 93			Scale	1/8" = 1'-0"
4380 sqft			BCIN# 19669	
		LO#	80577	



SECOND FLOOR PLAN ELEV. 'B' – LOT 93

LOT 93
CSA-F280-12
PACKAGE A1

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.

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
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Client GOLDPARK HOMES		<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 SECOND FLOOR HEATING LAYOUT	
Project Name PINE VALLEY & TESTON VAUGHAN, ONTARIO KNIGHTSWOOD OPT. 5 BED 5005 - LOT 93 4380 sqft			Date NOV/2018	
			Scale 1/8" = 1'-0"	
			BCIN# 19669	
			LO# 80577	