


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@hvacdsgns.ca	
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()		
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]				
<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 HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12		Model: 5005 - LOT 93 - WOB THE KNIGHTSWOOD Project: PINE VALLEY & TESTON		
D. Declaration of Designer				
I <u>MICHAEL O'ROURKE</u> declare that (choose one as appropriate): <div style="text-align: center;">(print name)</div>				
<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		 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				THE KNIGHTSWOOD				DATE: Nov-18		WINTER NATURAL AIR CHANGE RATE		HEAT LOSS AT °F.		CSA-F280-1									
BUILDER: GOLD PARK HOMES				TYPE: 5005 - LOT 93 - WOB				LO# 80576		SUMMER NATURAL AIR CHANGE RATE		HEAT GAIN AT °F.		SB-12 PACKAGE A1									
ROOM USE		MBR		ENS		WIC		BED-2		BED-3		BED-4		ENS-2		WIC-2		ENS-3		ENS-4		WIC-3	
EXP. WALL	CLG. HT.	46	11	36	10	13	10	36	11	36	10	19	10	6	10	3	4	7	10	14			
FACTORS		LOSS		GAIN		LOSS		GAIN		LOSS		LOSS		GAIN		LOSS		LOSS		LOSS		LOSS	
GRS.WALL AREA		483		342		124		378		342		181		57		29		38		67		133	
GLAZING		LOSS		LOSS		LOSS		LOSS		LOSS		LOSS		LOSS		LOSS		LOSS		LOSS		LOSS	
NORTH	21.3	15.3	0	0	0	0	6	128	92	0	0	0	0	8	170	122	0	0	0	0	0	0	
EAST	21.3	39.4	0	0	0	0	0	65	1383	2560	50	1064	1969	0	0	0	0	0	0	0	0	0	
SOUTH	21.3	23.7	0	0	0	0	0	0	0	10	213	237	49	1043	1160	0	0	0	0	8	170	189	
WEST	21.3	39.4	50	1064	1969	34	724	1339	0	0	0	0	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	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	0	0	0	0	0	0	0	0	
NET EXPOSED WALL		4.5	0.8	433	1532	325	308	1375	231	118	524	88	313	1397	235	282	1258	212	132	587	99	29	127
NET EXPOSED BSMT WALL ABOVE GR		3.6	0.5	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	533	684	313	323	415	190	247	317	145	175	225	103	249	320	146	225	289	132	60	77
NO ATTIC EXPOSED CLG		2.7	1.3	0	0	0	0	0	0	78	214	98	18	49	23	60	165	76	0	0	0	0	
EXPOSED FLOOR		2.6	0.4	0	0	0	0	0	0	154	393	66	253	645	109	18	46	8	0	0	0	0	
BASEMENT/CRAWL HEAT LOSS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	153	26	40	102	17	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	
SUBTOTAL HT LOSS		3680	2608	2513	1760	1362	391	3105	2595	2033	1467	0.20	0.35	0.20	0.35	0.20	0.35	0.20	0.35	0.20	0.35	0.20	0.35
SUB TOTAL HT GAIN		0.20	0.35	0.20	0.35	0.20	0.35	0.20	0.35	0.20	0.35	0.20	0.35	0.20	0.35	0.20	0.35	0.20	0.35	0.20	0.35	0.20	0.35
LEVEL FACTOR / MULTIPLIER		1299	191	887	129	481	29	1364	190	1041	735	107	84	24	7	38	5	6	22	200	352	66	66
AIR CHANGE HEAT GAIN		0	0	0	0	184	42	523	438	399	384	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	0	0	0	0	0	0	0	
DUCT GAIN		2	480	0	0	0	0	1	240	1	240	1	240	0	0	0	0	0	0	0	0	0	
HEAT GAIN PEOPLE		240	813	3399	0	2027	600	5751	813	4391	2818	813	813	0	0	0	0	0	0	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS		4979	5319	2456	2456	600	600	6270	5487	4391	2818	813	813	0	0	417	389	115	766	1350	1261	1261	
TOTAL HT LOSS BTU/H																							
TOTAL HT GAIN x 1.3 BTU/H																							

ROOM USE		LIB		DIN		KIT/IGT		CAB		LAUN		PWD		FOY		MUD				WOB		BAS	
EXP. WALL	CLG. HT.	31	11	32	11	32	11	46	11	0	10	5	11	35	11	18	12			52	10	166	
FACTORS		LOSS		LOSS		LOSS		LOSS		LOSS		LOSS		LOSS		LOSS				LOSS		LOSS	
GRS.WALL AREA		326		336		914		473		0		53		388		207				494		1245	
GLAZING		LOSS		LOSS		LOSS		LOSS		LOSS		LOSS		LOSS		LOSS				LOSS		GAIN	
NORTH	21.3	15.3	0	0	0	46	979	702	0	0	0	9	192	137	0	0	0	0	0	0	0	6	
EAST	21.3	39.4	56	1192	2205	0	0	0	0	0	0	0	0	0	11	234	433	0	0	0	0	128	
SOUTH	21.3	23.7	0	0	34	724	805	20	426	474	63	1341	1492	0	0	0	0	0	25	532	592	6	
WEST	21.3	39.4	0	0	0	0	95	2022	3741	53	1128	2087	0	0	0	0	0	107	2277	4214	0	128	
SKYL.T.	37.2	101.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	142	
DOORS	25.2	4.3	0	0	0	0	0	20	505	85	10	252	43	0	0	45	1136	191	0	0	0	0	
NET EXPOSED WALL		4.5	0.8	270	1203	203	302	1348	227	733	3269	551	347	1546	260	312	1390	234	40	1010	170	40	
NET EXPOSED BSMT WALL ABOVE GR		3.6	0.6	0	0	0	0	0	0	0	0	44	194	33	0	187	835	141	322	1437	242	0	
EXPOSED CLG		1.3	0.6	0	0	0	0	0	0	102	131	60	0	0	41	53	24	0	0	332	1195	0	
NO ATTIC EXPOSED CLG		2.7	1.3	0	0	0	0	0	0	203	558	255	0	0	0	0	0	0	0	0	0	201	
EXPOSED FLOOR		2.6	0.4	0	0	0	0	0	0	0	56	143	24	40	110	50	0	0	0	0	0	0	
BASEMENT/CRAWL HEAT LOSS		0	0	0	0	0	0	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	0	0	0	0	0	0		
SUBTOTAL HT LOSS		2394	2408	2071	1032	7200	5553	4825	4138	274	84	496	220	2813	883	1340	226	1146	6402	5218	2746	5206	
SUB TOTAL HT GAIN		0.30	0.49	0.30	0.49	0.30	0.49	0.30	0.49	0.20	0.35	0.30	0.49	0.30	0.49	0.30	0.49	0.30	0.49	0.50	1.48	605	
LEVEL FACTOR / MULTIPLIER		1168	176	1010	76	3512	406	2353	303	97	84	242	16	1372	65	653	17	0	0	0	0	0	
AIR CHANGE HEAT LOSS		0	0	0	0	0	0	0	0	37	90	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	0	0	0	0	0	0	0	
DUCT GAIN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
HEAT GAIN PEOPLE		240	813	813	813	10712	813	7179	813	407	813	737	308	4185	0	1993	0	0	7549	0	0	813	
HEAT GAIN APPLIANCES/LIGHTS		3562	4416	3082	2497	8804	8804	6829	1291	407	813	737	308	4185	1232	1993	315	0	0	0	0	2397	
TOTAL HT LOSS BTU/H																							
TOTAL HT GAIN x 1.3 BTU/H																							

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

THE KNIGHTSWOOD
TYPE: 5005 - LOT 93 - WOB

DATE: Nov-18

GFA: 4380 LO# 80576

HEATING CFM	1955	COOLING CFM	1955
TOTAL HEAT LOSS	89,004	TOTAL HEAT GAIN	60,641
AIR FLOW RATE CFM	21.97	AIR FLOW RATE CFM	32.24

AFUE = 96 %
INPUT (BTU/H) = 110,000
OUTPUT (BTU/H) = 106,000

LENNOX
EL296UH110XE60C
FAN SPEED
LOW
MEDIUM
HIGH

DESIGN CFM = 1955
CFM @ 6" E.S.P.

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	19	13	8
R/A	0	0	5	3	1

TEMPERATURE RISE 50 °F

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

All S/A runs 5/8" 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	ENS-2	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	2.49	2.73	2.03	1.92	2.20	1.41	0.92	0.42	0.39	2.49	0.77	1.78	3.08	2.68	2.68	2.68	0.41	0.74	4.19	1.99	3.74	3.74	3.74	3.74
CFM PER RUN HEAT	55	60	45	42	48	31	20	9	9	55	17	39	68	59	59	59	9	16	92	44	82	82	82	82
CFM PER RUN COOLING	86	72	19	67	88	55	11	3	4	86	13	71	80	71	71	71	42	10	40	10	37	37	37	37
ADJUSTED PRESSURE	0.15	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.16	0.15	0.15	0.15	0.15
EQUIVALENT LENGTH	190	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	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	0.08	0.07	0.06	0.07	0.08	0.12	0.09	0.07	0.1	0.07	0.06	0.06	0.08	0.07	0.08	0.09	0.11
ROUND DUCT SIZE	6	6	5	5	6	5	4	4	4	6	4	5	6	5	5	5	4	4	6	4	6	5	5	5
HEATING VELOCITY (ft/min)	280	306	330	308	308	245	229	103	103	280	195	286	347	433	433	433	103	184	469	505	418	602	602	602
COOLING VELOCITY (ft/min)	438	367	140	492	449	404	126	34	46	438	149	521	408	521	521	521	482	115	204	115	189	272	272	272
OUTLET GRILL SIZE	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10
TRUNK	D	C	E	G	F	E	E	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	39	40
ROOM NAME	BAS	BAS	BED-2	BED-2	BED-3	WIC-3	LIB	KIT/GT	CAB	CAB	CAB	ENS	ENS	BAS	BED-4	BAS
RM LOSS MBH	3.74	3.74	1.92	1.92	2.20	1.35	1.78	2.68	2.39	2.39	2.39	0.33	0.33	3.74	1.41	3.74
CFM PER RUN HEAT	82	82	42	42	48	30	39	59	53	53	53	7	7	82	31	82
CFM PER RUN COOLING	115	115	2.09	2.09	2.74	1.26	2.21	2.20	2.28	2.28	2.28	0.12	0.12	1.15	1.71	1.15
ADJUSTED PRESSURE	0.15	0.15	0.16	0.16	0.15	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.16	0.15
EQUIVALENT LENGTH	34	50	52	55	75	58	51	55	69	71	82	56	58	23	48	57
TOTAL EFFECTIVE LENGTH	110	150	170	160	160	190	160	120	130	130	140	200	190	140	190	160
ADJUSTED PRESSURE	0.1	0.07	0.07	0.07	0.06	0.06	0.07	0.09	0.07	0.08	0.07	0.06	0.06	0.09	0.07	0.07
ROUND DUCT SIZE	5	6	5	5	6	5	5	5	5	5	5	4	4	5	5	6
HEATING VELOCITY (ft/min)	602	418	308	308	245	220	286	433	389	389	389	80	80	602	228	418
COOLING VELOCITY (ft/min)	272	189	492	492	449	301	521	521	536	536	536	46	46	272	404	189
OUTLET GRILL SIZE	3X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10
TRUNK	G	F	G	G	F	F	F	B	A	A	A	C	C	E	E	C

SUPPLY AIR TRUNK SIZE										RETURN AIR TRUNK SIZE									
TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)		
TRUNK A	257	0.06	9.1	10	8	TRUNK G	613	0.06	12.5	18	8	TRUNK O	0	0.05	0	0	8		
TRUNK B	200	0.07	7.9	8	8	TRUNK H	1955	0.06	19.4	34	10	TRUNK P	0	0.05	0	0	8		
TRUNK C	716	0.06	13.3	20	8	TRUNK I	0	0.00	0	0	8	TRUNK Q	0	0.05	0	0	8		
TRUNK D	251	0.06	9	10	8	TRUNK J	0	0.00	0	0	8	TRUNK R	0	0.05	0	0	8		
TRUNK E	1343	0.06	16.8	32	8	TRUNK K	0	0.00	0	0	8	TRUNK S	0	0.05	0	0	8		
TRUNK F	378	0.06	10.5	14	8	TRUNK L	0	0.00	0	0	8	TRUNK T	0	0.05	0	0	8		

RETURN AIR #									
AIR VOLUME	PLENUM PRESSURE	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	ROUND DUCT SIZE	INLET GRILL SIZE	INLET GRILL SIZE	INLET GRILL SIZE	INLET GRILL SIZE
1	0	2@7"	0	0	0	0	0	0	0
115	0.13	130	115	0.13	130	130	130	130	130
84	51	62	59	0.13	49	30	51	1	1
200	165	155	185	0.13	140	170	195	0	0
284	216	217	244	0.13	189	200	246	1	1
0.05	0.06	0.06	0.05	0.07	0.07	0.07	0.05	13.36	13.36
7	7	7	7	8.8	6.8	10.3	10.8	0	0
8	8	8	8	8	8	8	8	0	0
X	X	X	X	X	X	X	X	X	X
14	14	14	14	14	14	14	14	14	14

TYPE: 5005 - LOT 93 - WOB
SITE NAME: PINE VALLEY & TESTON

LO # 80576
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	<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>7</u> @ 10.6 cfm	<u>74.2</u> cfm
Other Rooms	<u>6</u> @ 10.6 cfm	<u>63.6</u> cfm
Table 9.32.3.A.	TOTAL	<u>212.0</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	79.5	cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>212</u>	cfm
Less Principal Ventil. Capacity	<u>155</u>	cfm
Required Supplemental Capacity	<u>57.0</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
<u>155.0</u> cfm	<u>3.0</u> 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	<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		
<u>155</u> cfm high	<u>64</u> cfm low	
<u>75</u> % 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:	November-18

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																										
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																										
LO#: 80576	Model: 5005 - LOT 93 - WOB	Builder: GOLD PARK HOMES	Date: 02/11/2018																																																							
Volume Calculation		Air Change & Delta T Data																																																								
<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>2020</td> <td>10</td> <td>19190</td> </tr> <tr> <td>First</td> <td>2020</td> <td>11</td> <td>21210</td> </tr> <tr> <td>Second</td> <td>2360</td> <td>10</td> <td>22420</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>62,820.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>1778.9 m³</td> </tr> </table>		House Volume Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	2020	10	19190	First	2020	11	21210	Second	2360	10	22420	Third	0	9	0	Fourth	0	9	0	Total:			62,820.0 ft³	Total:			1778.9 m³	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>WINTER NATURAL AIR CHANGE RATE</td> <td>0.402</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.135</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="4" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DTDh</td> <td>22</td> <td>-20</td> <td>42</td> <td>76</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>31</td> <td>7</td> <td>13</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.402	SUMMER NATURAL AIR CHANGE RATE	0.135	Design Temperature Difference					Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-20	42	76	Summer DTDc	24	31	7	13
House Volume Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																							
Bsmt	2020	10	19190																																																							
First	2020	11	21210																																																							
Second	2360	10	22420																																																							
Third	0	9	0																																																							
Fourth	0	9	0																																																							
Total:			62,820.0 ft³																																																							
Total:			1778.9 m³																																																							
WINTER NATURAL AIR CHANGE RATE	0.402																																																									
SUMMER NATURAL AIR CHANGE RATE	0.135																																																									
Design Temperature Difference																																																										
	Tin °C	Tout °C	ΔT °C	ΔT °F																																																						
Winter DTDh	22	-20	42	76																																																						
Summer DTDc	24	31	7	13																																																						
6.2.6 Sensible Gain due to Air Leakage																																																										
$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$																																																										
0.402	x	494.13	x	7 °C	x	1.2	=	569 W																																																		
							=	1943 Btu/h																																																		
6.2.7 Sensible heat Gain due to Ventilation																																																										
$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																										
155 CFM	x	76 °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)																																																										
$HL_{airr} = Level Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																										
<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="5" style="text-align: center; vertical-align: middle;">34,368</td> <td>11,608</td> <td>1.480</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>21,139</td> <td>0.488</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>19,477</td> <td>0.353</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 _{level})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)	1	0.5	34,368	11,608	1.480	2	0.3	21,139	0.488	3	0.2	19,477	0.353	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	34,368	11,608	1.480																																																						
2	0.3		21,139	0.488																																																						
3	0.2		19,477	0.353																																																						
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 - WOB	THE KNIGHTSWOOD	BUILDER: GOLD PARK HOMES
SFQT: 4380	LO# 80576	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):	62820.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.5 ft
LENGTH: 77.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	166.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	72.0 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	-

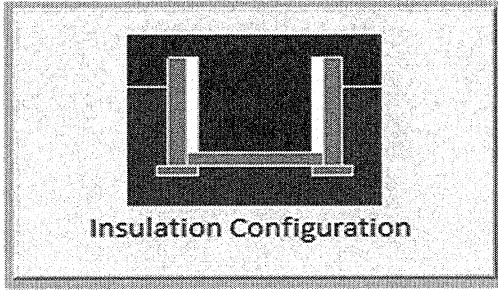
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

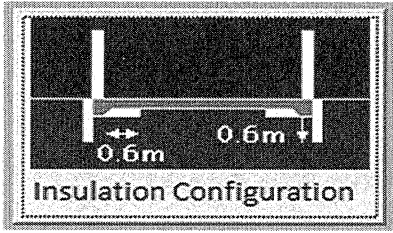
Weather Station Description		
Province:	Ontario	
Region:	Vaughan (Woodbridge)	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	7.6	 Insulation Configuration
Floor Width (m):	12.8	
Exposed Perimeter (m):	50.6	
Wall Height (m):	2.9	
Depth Below Grade (m):	2.04	
Window Area (m ²):	1.1	
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):		804

TYPE: 5005 - LOT 93 - WOB
LO# 80576

THE KNIGHTSWOOD

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):	4.6	 Insulation Configuration
Width (m):	12.8	
Exposed Perimeter (m):	21.9	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		336

TYPE: 5005 - LOT 93 - WOB
LO# 80576

THE KNIGHTSWOOD

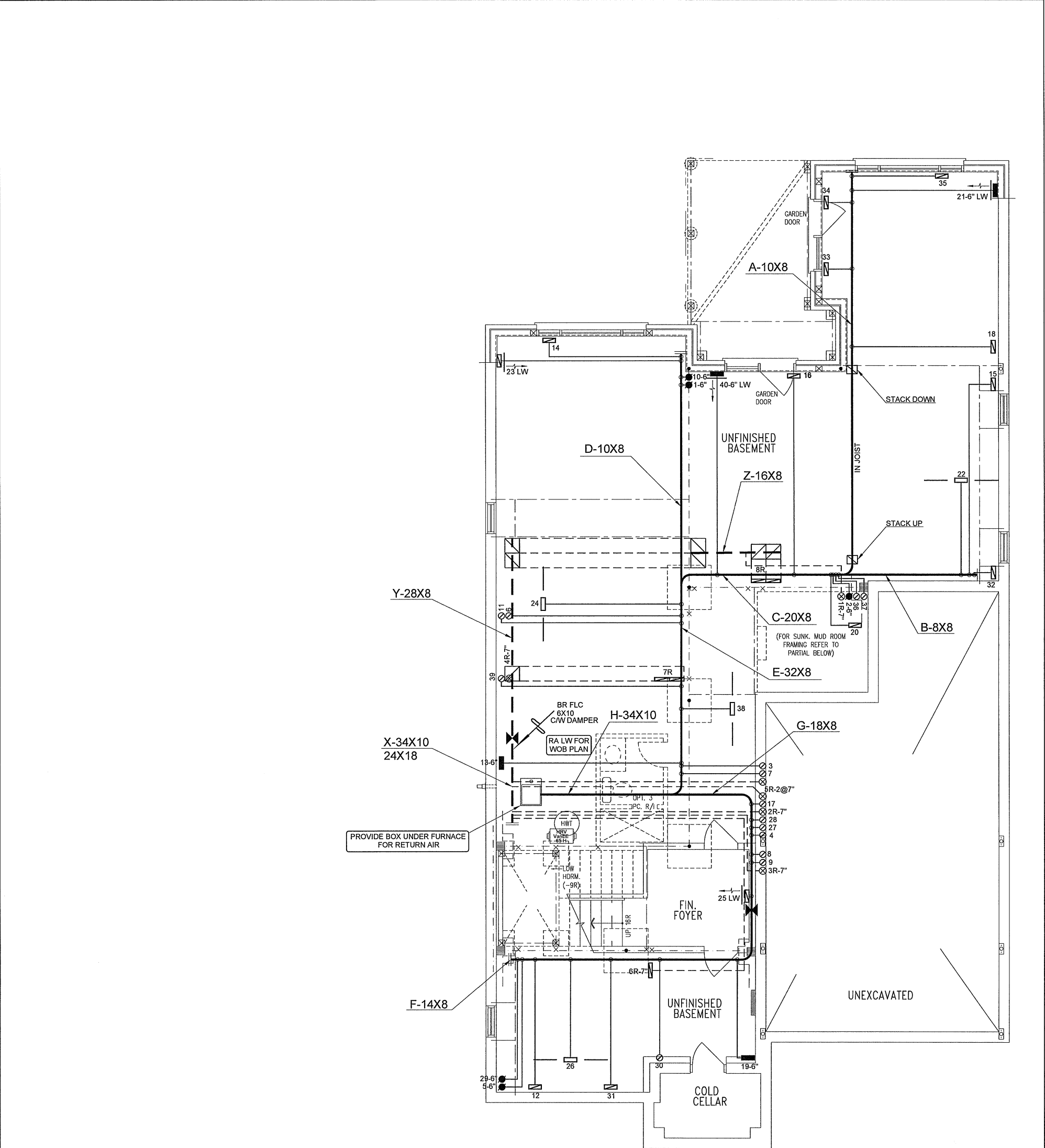
Air Infiltration Residential Load Calculator

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):	8.99			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1778.9			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	2371.3 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):	0.402			
Cooling Air Leakage Rate (ACH/H):	0.135			

TYPE: 5005 - LOT 93 - WOB
LO# 80576

THE KNIGHTSWOOD



BASEMENT PLAN ELEV. 'B' – LOT 93

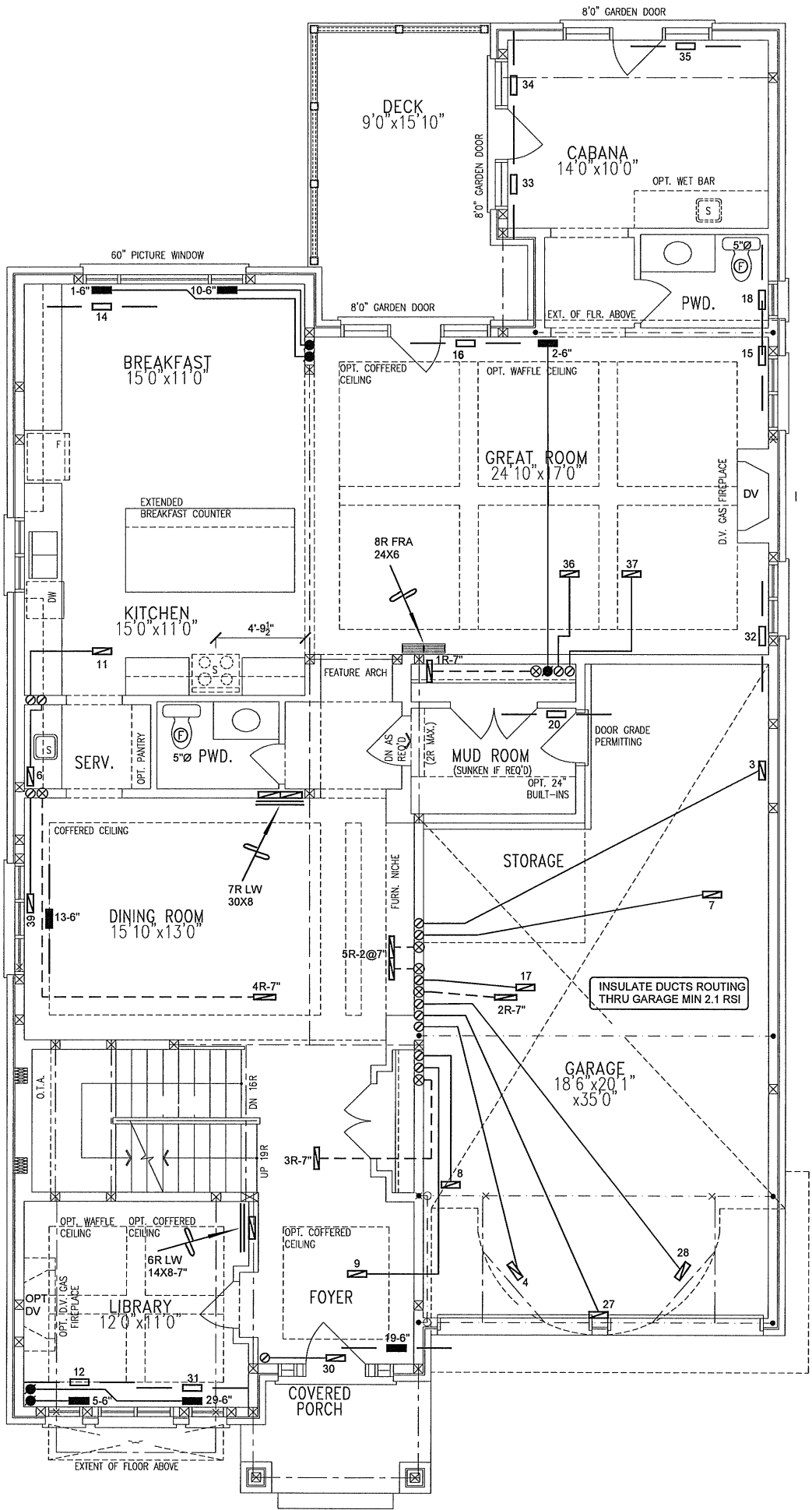
WOB
LOT 93
CSA-F280-12
PACKAGE A1

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							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	

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 GOLDPARK 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	HEAT LOSS 92184 BTU/H UNIT DATA MAKE LENNOX MODEL EL296UH110XE60C INPUT 110 MBTU/H OUTPUT 106 MBTU/H COOLING 5.0 TONS FAN SPEED 1955 cfm @ 0.6" w.c.	# OF RUNS S/A R/A FANS 3RD FLOOR 2ND FLOOR 19 5 7 1ST FLOOR 13 3 3 BASEMENT 8 1 0	Sheet Title BASEMENT HEATING LAYOUT	
Project Name PINE VALLEY & TESTON VAUGHAN, ONTARIO	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.		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	Date	NOV/2018
				Scale	1/8" = 1'-0"
KNIGHTSWOOD 5005 - LOT 93 WOB 4380 sqft				BCIN#	19669
				LO#	80576



GROUND FLOOR PLAN ELEV. 'B' - LOT 93

WOB
LOT 93
CSA-F280-12
PACKAGE A1

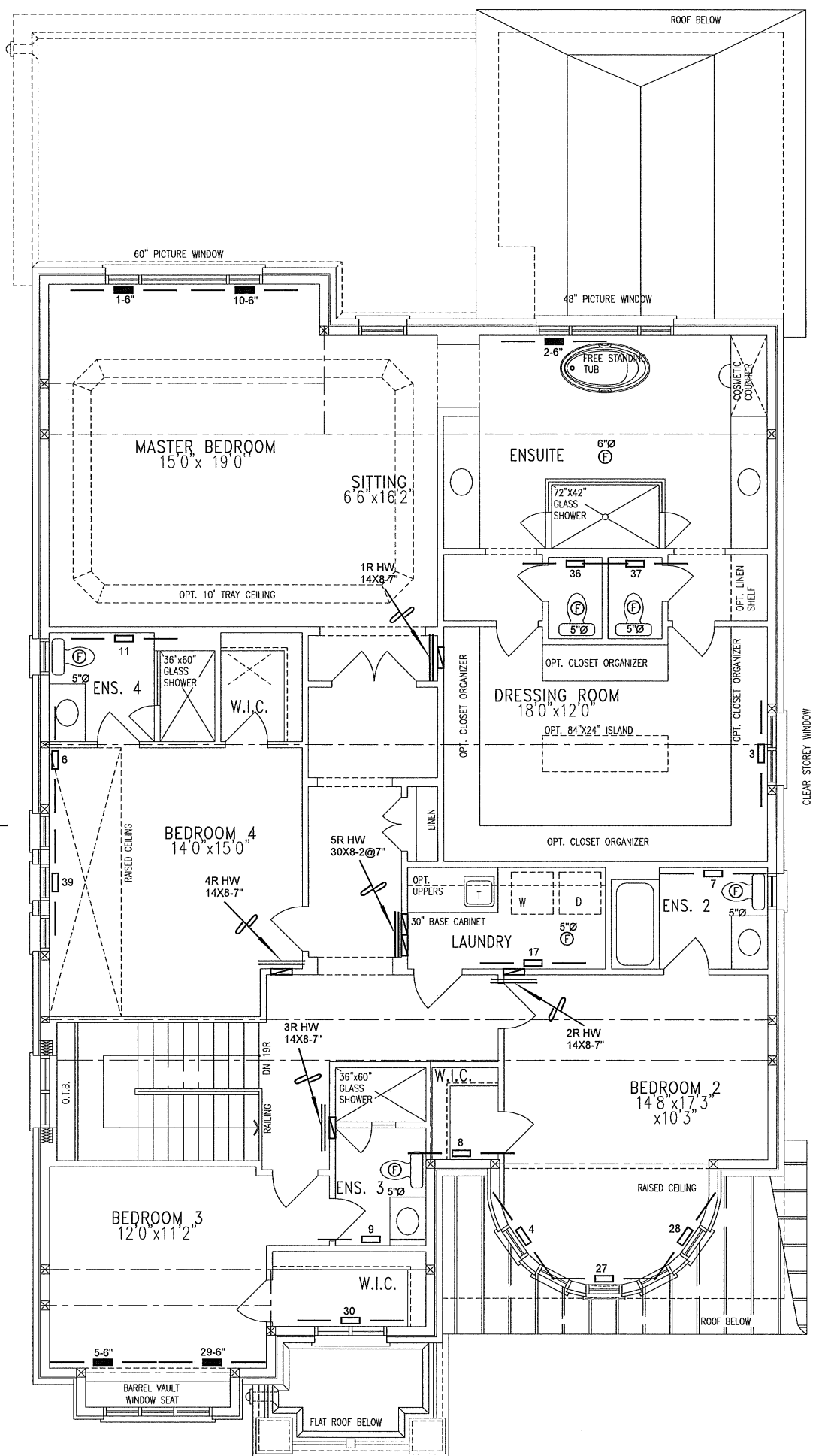
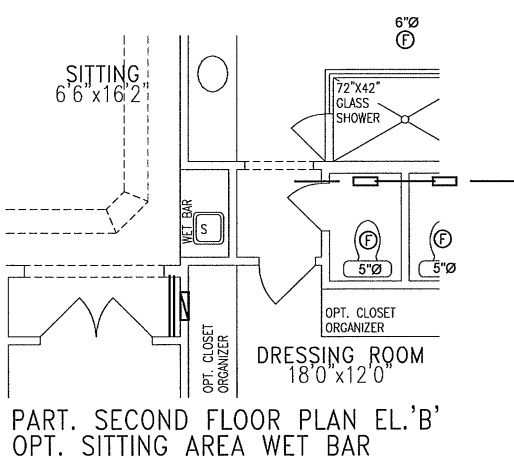
I MICHAEL O'ROURKE HAVE REVIEW
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C.3.2.5 OF THE
BUILDING CODE.

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

HVAC LEGEND							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	

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>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			Scale	1/8" = 1'-0"
KNIGHTSWOOD			BCIN# 19669	
5005 - LOT 93 WOB 4380 sqft			LO#	80576



SECOND FLOOR PLAN ELEV. 'B' - LOT 93

PACKAGE A1

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

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 DRAWNGS 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.

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.

KNIGHTSWOOD
5005 - LOT 93 WOB 4380 sqft

Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

LO#	80576
-----	-------