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 (WOODBRIDGE)	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]

☐ House	☒ HVAC – House	☐ Building Structural
☐ Small Buildings	☐ Building Services	☐ Plumbing – House
☐ Large Buildings	☐ Detection, Lighting and Power	☐ Plumbing – All Buildings
☐ Complex Buildings	☐ Fire Protection	☐ On-site Sewage Systems

Description of designer's work	
HEAT LOSS / GAIN CALCULATIONS **DUCT SIZING** **RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY** **RESIDENTIAL SYSTEM DESIGN per CSA-F280-12**	**Model:** 5003 - THE OAKGROVE LOT 91 WOB **Project:** PINE VALLEY & TESTON

D. Declaration of Designer

I **MICHAEL O'ROURKE** declare that (choose one as appropriate):
(print name)

☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4.of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: _____
Firm BCIN: _____

☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5.of Di vision C, of the Building Code.

Individual BCIN: 19669
Basis for exemption from registration and qualification: O.B.C SENTENCE 3.2.4.1 (4)

☐ The design work is exempt from the registration and qualification requirements of the Building Code.
Basis for exemption from registration and qualification: _____

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. I have submitted this application with the knowledge and consent of the firm.

April 30, 2019
Date

Signature of Designer

NOTE:

1. 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.
2. 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.

HVAC DESIGNS LTD.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: PINE VALLEY & TESTON | LOT 91 WOB | DATE: Apr-19 | WINTER NATURAL AIR CHANGE RATE 0.407 | HEAT LOSS ΔT °F. 76 | CSA-F280-12

BUILDER: GOLD PARK HOMES | TYPE: 5003 - THE OAKGROVE | GFA: 3854 | LO# 82131 | SUMMER NATURAL AIR CHANGE RATE 0.148 | HEAT GAIN ΔT °F. 16 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			DEN			BATH			LOUNGE			LAUN			ENS-2			BED-4		
EXP. WALL			38			14			12			11			31			27			13			16			8			8			28		
CLG. HT.			10			9			9			9			9			9			9			9			9			9			9		
	FACTORS																																		
GRS.WALL AREA	LOSS	GAIN	380			126			108			99			279			243			117			144			72			72			252		
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	16.8	0	0	0	0	0	0	0	0	0	18	383	303	0	0	0	0	0	0	0	0	0	0	0	0	9	192	151	9	192	151	0	0	0
EAST	21.3	42.4	0	0	0	0	0	0	0	0	0	0	0	0	64	1362	2713	0	0	0	32	681	1357	0	0	0	0	0	0	0	0	0	32	681	1357
SOUTH	21.3	25.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	511	618	0	0	0	0	0	0	16	340	412
WEST	21.3	42.4	44	936	1865	19	404	805	0	0	0	0	0	0	0	0	0	28	596	1187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	37.2	103.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	25.2	5.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.5	0.9	336	1499	312	107	478	99	108	482	100	81	361	75	215	959	199	215	959	199	85	379	79	120	536	111	63	281	58	63	281	58	204	910	189
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	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	255	327	163	196	252	125	203	261	130	231	296	147	240	308	153	182	234	116	170	218	109	304	390	194	168	216	107	168	216	107	192	246	123
NO ATTIC EXPOSED CLG	2.7	1.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0			0			0			0			0	
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			0			0			0			0	
SUBTOTAL HT LOSS				2763			1133			742			1041			2629			1789			1278			1436			688			688			2178	
SUB TOTAL HT GAIN					2340			1030			230			525			3066			1503			1544			923			317			317			2080
LEVEL FACTOR / MULTIPLIER			0.20	0.38		0.20	0.38		0.20	0.38		0.20	0.38		0.20	0.38		0.20	0.38		0.20	0.38		0.20	0.38		0.20	0.38		0.20	0.38		0.20	0.38	
AIR CHANGE HEAT LOSS				1044			428			280			393			993			676			483			543			260			260			823	
AIR CHANGE HEAT GAIN					205			90			20			46			269			132			135			81			28			28			182
DUCT LOSS				0			0			0			0			0			0			0			0			0			0			0	
DUCT GAIN					0			0			0			0			0			0			0			0			0			0			0
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	0		0	0		0	0		0	0		0	0		0	1		240
HEAT GAIN APPLIANCES/LIGHTS					609			0			0			609			609			609			0			609			609			0			609
TOTAL HT LOSS BTU/H				3807			1561			1023			1434			3623			2465			1761			1979			948			948			3001	
TOTAL HT GAIN x 1.3 BTU/H					4724			1456			325			1847			5439			2917			2183			2097			1240			448			4045

ROOM USE			DIN			LIV			KT/GT									FOY			MUD						WOB			BAS		
EXP. WALL			16			31			94									30			31						60			142		
CLG. HT.			11			11			11									11			12						10			10		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	176			341			1034									330			372						600			994		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN								LOSS	GAIN		LOSS	GAIN					LOSS	GAIN		LOSS	GAIN
NORTH	21.3	16.8	0	0	0	0	0	0	37	787	622							0	0	0	9	192	151				30	638	504	4	85	67
EAST	21.3	42.4	0	0	0	35	745	1484	0	0	0							20	426	848	0	0	0				0	0	0	0	0	0
SOUTH	21.3	25.7	26	553	669	17	362	438	24	511	618							0	0	0	0	0	0				0	0	0	8	170	206
WEST	21.3	42.4	0	0	0	0	0	0	198	4213	8394							0	0	0	0	0	0				84	1788	3561	0	0	0
SKYLT.	37.2	103.0	0	0	0	0	0	0	0	0	0							0	0	0	0	0	0				0	0	0	0	0	0
DOORS	25.2	5.2	0	0	0	0	0	0	0	0	0							20	505	105	20	505	105				0	0	0	20	505	105
NET EXPOSED WALL	4.5	0.9	150	669	139	289	1290	268	775	3459	719							290	1294	269	343	1531	318				486	2169	451	0	0	0
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	426	1533	319
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0							0	0	0	0	0	0				0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.4	0	0	0	12	33	16	0	0	0							0	0	0	0	0	0				0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.5	0	0	0	0	0	0	0	0	0							0	0	0	0	0	0				0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0									0			0							2852		
SLAB ON GRADE HEAT LOSS				0			0			0									0			0						892				
SUBTOTAL HT LOSS				1223			2429			8970									2225			2227						5487			5146		
SUB TOTAL HT GAIN					808			2206			10352									1222			575						4516			697	
LEVEL FACTOR / MULTIPLIER			0.30	0.54		0.30	0.54		0.30	0.54								0.30	0.54		0.30	0.54								0.50	1.45		
AIR CHANGE HEAT LOSS				664			1320			4872									1208			1210									15457		
AIR CHANGE HEAT GAIN					71			193			907									107			50										457	
DUCT LOSS				0			0			0									0			0									0		
DUCT GAIN					0			0			0									0			0										0	
HEAT GAIN PEOPLE	240		0		0	0		0	0		0							0		0	0		0				0		0	0		0		
HEAT GAIN APPLIANCES/LIGHTS					609			609			609									0			609						0			609	
TOTAL HT LOSS BTU/H				1887			3749			13842									3433			3437						6379			20602		
TOTAL HT GAIN x 1.3 BTU/H					1935			3911			15430									1728			1605						5871			2292	

TOTAL HEAT GAIN BTU/H: 60155 TONS: 5.01 LOSS DUE TO VENTILATION LOAD BTU/H: 3181 STRUCTURAL HEAT LOSS: 75880 TOTAL COMBINED HEAT LOSS BTU/H: 79061

I 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.

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

HVAC DESIGNS LTD.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

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

LOT 91 WOB
TYPE: 5003 - THE OAKGROVE

DATE: Apr-19

GFA: 3854 LO# 82131

HEATING CFM	1955	COOLING CFM	1955	furnace pressure	0.6
TOTAL HEAT LOSS	75,880	TOTAL HEAT GAIN	59,494	furnace filter	0.05
AIR FLOW RATE CFM	25.76	AIR FLOW RATE CFM	32.86	a/c coil pressure	0.2
				available pressure for s/a & r/a	0.35

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	10	8
R/A	0	0	5	3	1

All S/A diffusers 4"x10" unless noted otherwise on layout.
All S/A runs 5"Ø unless noted otherwise on layout.

plenum pressure s/a	0.18	r/a pressure	0.17
max s/a dif press. loss	0.02	r/a grille press. Loss	0.02
min adjusted pressure s/a	0.16	adjusted pressure r/a	0.15

^LENNOX
EL296UH110XE60C 110

FAN SPEED	
LOW	0
MEDLOW	1380
MEDIUM	1505
MEDIUM HIGH	1685
HIGH	1955

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

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

TEMPERATURE RISE 50 °F

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	LOUNGE	WIC	BED-2	BED-3	BED-4	BATH	DEN	LAUN	MBR	ENS-2	DIN	LIV	KT/GT	KT/GT	KT/GT	KT/GT	KT/GT	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.90	1.98	1.02	1.43	1.21	1.50	1.76	2.46	0.95	1.90	0.95	1.89	1.87	2.77	2.77	2.77	2.77	2.77	3.43	3.44	3.37	3.37	3.37	3.37
CFM PER RUN HEAT	49	51	26	37	31	39	45	63	24	49	24	49	48	71	71	71	71	71	88	89	87	87	87	87
RM GAIN MBH.	2.36	2.10	0.32	1.85	1.81	2.02	2.18	2.92	1.24	2.36	0.45	1.94	1.96	3.09	3.09	3.09	3.09	3.09	1.73	1.60	1.02	1.02	1.02	1.02
CFM PER RUN COOLING	78	69	11	61	60	66	72	96	41	78	15	64	64	101	101	101	101	101	57	53	34	34	34	34
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	48	26	36	48	45	54	42	63	45	41	49	26	39	36	27	31	38	45	35	40	46	22	53	41
EQUIVALENT LENGTH	185	205	120	165	140	195	150	150	130	185	170	90	110	110	110	170	160	110	120	150	190	150	150	120
TOTAL EFFECTIVE LENGTH	233	231	156	213	185	249	192	213	175	226	219	116	149	146	137	201	198	155	155	190	236	172	203	161
ADJUSTED PRESSURE	0.07	0.07	0.11	0.08	0.09	0.07	0.09	0.08	0.1	0.08	0.08	0.15	0.12	0.11	0.12	0.08	0.08	0.1	0.1	0.09	0.07	0.09	0.08	0.1
ROUND DUCT SIZE	5	5	4	5	**6**	5	5	**6**	4	5	4	5	5	5	**6**	**6**	**6**	**6**	5	**6**	**6**	5	**6**	5
HEATING VELOCITY (ft/min)	360	374	298	272	158	286	330	321	275	360	275	360	352	521	362	362	362	362	646	454	444	639	444	639
COOLING VELOCITY (ft/min)	573	507	126	448	306	485	529	489	470	573	172	470	470	742	515	515	515	515	419	270	173	250	173	250
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	4X10	4X10	3X10	4X10	3X10
TRUNK	A	E	C	E	E	D	D	F	F	A	B	E	D	A	A	B	B	F	D	B	A	A	F	F

RUN #	25	26	27	28	29	30	31	32	33	34
ROOM NAME	BAS	BAS	BAS	ENS	BED-3	BED-3	BED-4	LIV	ENS	BAS
RM LOSS MBH.	3.37	3.37	3.37	0.78	1.21	1.21	1.50	1.87	0.78	3.37
CFM PER RUN HEAT	87	87	87	20	31	31	39	48	20	87
RM GAIN MBH.	1.02	1.02	1.02	0.73	1.81	1.81	2.02	1.96	0.73	1.02
CFM PER RUN COOLING	34	34	34	24	60	60	66	64	24	34
ADJUSTED PRESSURE	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.16
ACTUAL DUCT LGH.	21	23	36	38	52	56	43	34	37	27
EQUIVALENT LENGTH	180	100	130	160	145	155	190	100	195	190
TOTAL EFFECTIVE LENGTH	201	123	166	198	197	211	233	134	232	217
ADJUSTED PRESSURE	0.08	0.13	0.1	0.09	0.09	0.08	0.07	0.13	0.07	0.07
ROUND DUCT SIZE	**6**	5	5	4	**6**	**6**	5	4	4	**6**
HEATING VELOCITY (ft/min)	444	639	639	229	158	158	286	551	229	444
COOLING VELOCITY (ft/min)	173	250	250	275	306	306	485	734	275	173
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10
TRUNK	E	E	D	F	E	E	D	D	F	B

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	414	0.07	10.4	12	x	8	621
TRUNK B	714	0.07	12.8	20	x	8	643
TRUNK C	1154	0.07	15.3	28	x	8	742
TRUNK D	394	0.07	10.2	12	x	8	591
TRUNK E	798	0.07	13.3	20	x	8	718
TRUNK F	372	0.07	10	12	x	8	558
TRUNK G	0	0.00	0	0	x	8	0
TRUNK H	0	0.00	0	0	x	8	0
TRUNK I	0	0.00	0	0	x	8	0
TRUNK J	0	0.00	0	0	x	8	0
TRUNK K	0	0.00	0	0	x	8	0
TRUNK L	0	0.00	0	0	x	8	0

RETURN AIR #	1	2	3	4	5	6	7	8								BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	120	360	130	130	120	170	320	320	0	0	0	0	0	0	0	285
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	50	26	44	49	53	17	19	32	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	135	185	190	185	160	135	145	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	225	161	229	239	238	177	154	177	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.07	0.09	0.06	0.06	0.06	0.08	0.10	0.08	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	6.6	9.3	7	7	6.8	7.2	8.7	9.2	0	0	0	0	0	0	0	8.3
INLET GRILL SIZE	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	30	14	14	14	14	30	30	0	0	0	0	0	0	0	24

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK O	0	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1665	0.06	18.2	30	x	12	666
TRUNK Y	580	0.06	12.3	18	x	8	580
TRUNK Z	0	0.06	0	0	x	8	0
DROP	1955	0.06	19.4	24	x	18	652

I 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.

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

HVAC DESIGNS LTD.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

TYPE: 5003 - THE OAKGROVE LO # 82131
SITE NAME: PINE VALLEY & TESTON LOT 91 WOB

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES 9.32.3.1(1)

a) [✓] Direct vent (sealed combustion) only
b) [ ] Positive venting induced draft (except fireplaces)
c) [ ] Natural draft, B-vent or induced draft gas fireplace
d) [ ] Solid Fuel (including fireplaces)
e) [ ] No Combustion Appliances

HEATING SYSTEM

[✓] Forced Air [ ] Non Forced Air
[ ] Electric Space Heat

HOUSE TYPE 9.32.1(2)

[✓] I Type a) or b) appliance only, no solid fuel
[ ] II Type I except with solid fuel (including fireplaces)
[ ] III Any Type c) appliance
[ ] IV Type I, or II with electric space heat
[ ] Other: Type I, II or IV no forced air

SYSTEM DESIGN OPTIONS O.N.H.W.P.

[ ] 1 Exhaust only/Forced Air System
[ ] 2 HRV with Ducting/Forced Air System
[✓] 3 HRV Simplified/connected to forced air system
[ ] 4 HRV with Ducting/non forced air system
[ ] Part 6 Design

TOTAL VENTILATION CAPACITY 9.32.3.3(1)

Basement + Master Bedroom	2	@ 21.2 cfm	42.4	cfm
Other Bedrooms	3	@ 10.6 cfm	31.8	cfm
Kitchen & Bathrooms	5	@ 10.6 cfm	53	cfm
Other Rooms	8	@ 10.6 cfm	84.8	cfm
Table 9.32.3.A.		TOTAL	212.0	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	212	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	57.0	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 65H Location: BSMT

155.0 cfm 3.0 sones [✓] 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	Sones
ENS	QTXEN050C	50	✓	0.3
BATH	QTXEN050C	50	✓	0.3
ENS-2	QTXEN050C	50	✓	0.3
PWD	QTXEN050C	50	✓	0.3

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE 65H

155 cfm high 64 cfm low

75 % Sensible Efficiency @ 32 deg F (0 deg C) [✓] HVI Approved

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: Michael O'Rourke
HRAI # 001820
Date: April-19

I REVIEW AND TAKE RESPONIBILITY 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.

INDIVIDUAL BCIN: 19669 Michael O'Rourke MICHAEL O'ROURKE

HVAC DESIGNS LTD.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-m ail: info@hvacdesigns.ca

CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 82131 Model: 5003 - THE OAKGROVE Builder: GOLD PARK HOMES Date: 4/30/2019

Volume Calculation

House Volume

Level	Floor Area (ft^2)	Floor Height (ft)	Volume (ft^3)
Bsmt	1750	10	17500
First	1750	11	19250
Second	2125	9	19125
Third	0	9	0
Fourth	0	9	0
		Total:	55,875.0 ft^3
		Total:	1582.2 m^3

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.407
SUMMER NATURAL AIR CHANGE RATE	0.148

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-20	42	76
Summer DTDc	22	31	9	16

5.2.3.1 Heat Loss due to Air Leakage

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

0.407 x 439.50 x 42 °C x 1.2 = 9060 W

= **30914 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

$$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$$

= 0.148 x 439.50 x 9 °C x 1.2 = 686 W

= **2340 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

155 CFM x 76 °F x 1.08 x 0.25 = **3181 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

155 CFM x 16 °F x 1.08 x 0.25 = **661 Btu/h**

5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)

$$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$$

Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL_{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)
1	0.5	30,914	10,632	1.454
2	0.3		17,074	0.543
3	0.2		16,368	0.378
4	0		0	0.000
5	0		0	0.000

*HLairbv = Air leakage heat loss + ventilation heat loss
*For a balanced or supply only ventilation system HLairve = 0

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5003 - THE OAKGROVE LOT 91 WOB **BUILDER:** GOLD PARK HOMES
SFQT: 3854 **LO#** 82131 **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)	72

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 (ft^3):	55875.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft^2):	1.30	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 61.0 ft WIDTH:	40.0 ft	EXPOSED PERIMETER:	142.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	60.0 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

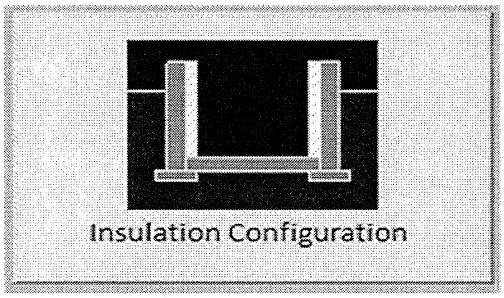
Michael O'Rourke

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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):	**6.1**
Floor Width (m):	**12.2**
Exposed Perimeter (m):	**43.3**
Wall Height (m):	**3.0**
Depth Below Grade (m):	**1.87**
Window Area (m^2):	**1.1**
Door Area (m^2):	**1.9**
Radiant Slab	
Heated Fraction of the Slab:	**0**
Fluid Temperature (°C):	**33**
Design Months	
Heating Month	**1**
Foundation Loads	
Heating Load (Watts):	**836**

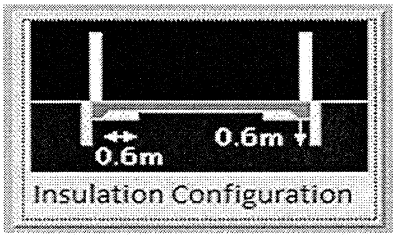

Insulation Configuration

TYPE: 5003 - THE OAKGROVE LOT 91 WOB
LO# 82131

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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):	**3.0**	
Width (m):	**12.2**	
Exposed Perimeter (m):	**18.3**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Results		
Heating Load (Watts):	**261**	

TYPE: 5003 - THE OAKGROVE LOT 91 WOB
LO# 82131

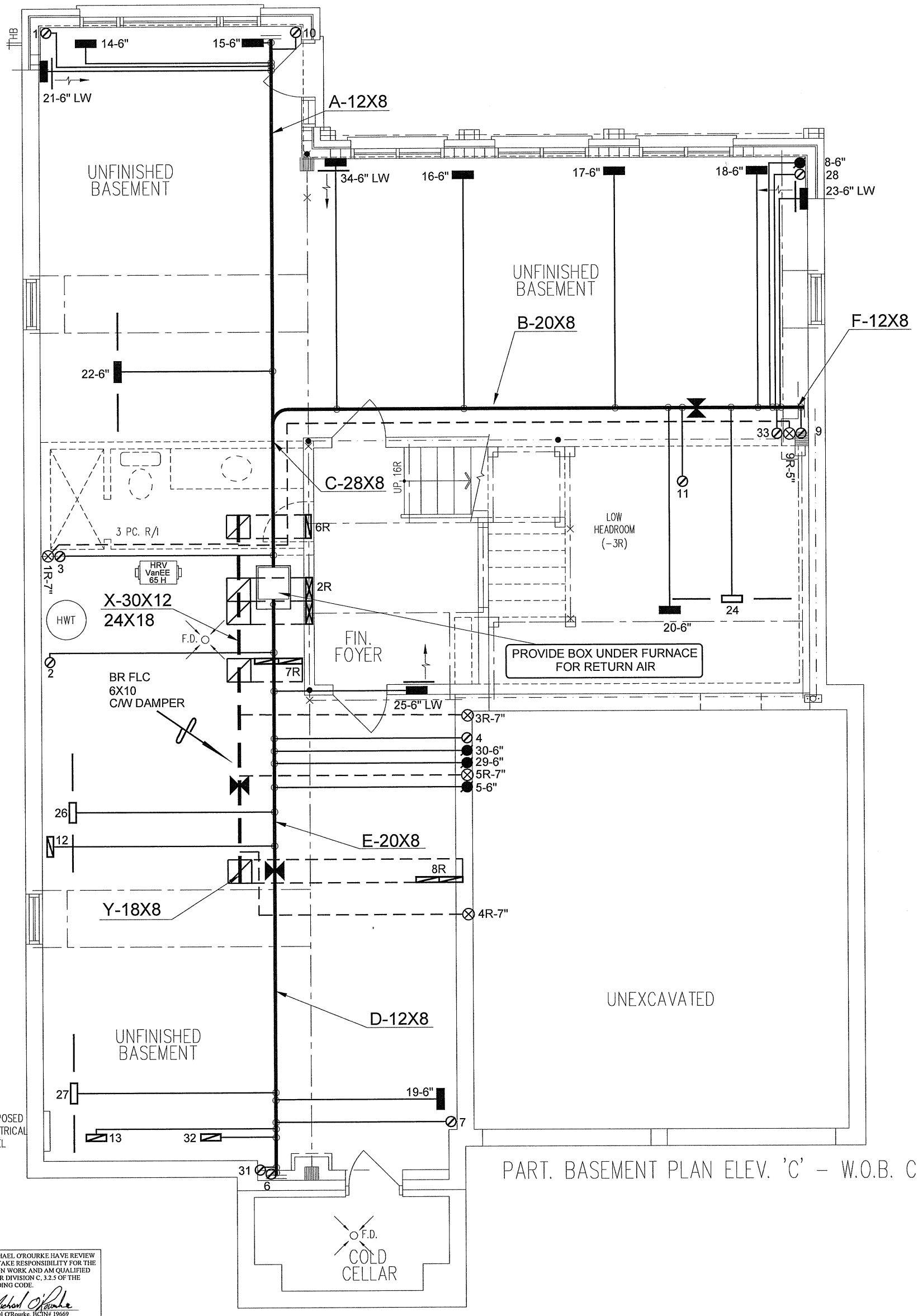
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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^3):	1582.2
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 2109.1 cm^2
	3.57 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 73.2 / Total Exhaust 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):	**0.148**

TYPE: 5003 - THE OAKGROVE LOT 91 WOB
LO# 82131



PART. BASEMENT PLAN ELEV. 'C' – W.O.B. COND.

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, BCIN# 19669
HVAC DESIGNS LTD.

WOB

CSA-F280-12

PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
— ▭ —	SUPPLY AIR GRILLE	▬	6" SUPPLY AIR BOOT ABOVE	▭	14"x8" RETURN AIR GRILLE	▭	RETURN AIR STACK ABOVE
— ▬ —	SUPPLY AIR GRILLE 6" BOOT	⊘	SUPPLY AIR STACK FROM 2nd FLOOR	▭	30"x8" RETURN AIR GRILLE	⊠	RETURN AIR STACK 2nd FLOOR
▭	SUPPLY AIR BOOT ABOVE	●	6" SUPPLY AIR STACK 2nd FLOOR	▭	FRA- FLOOR RETURN AIR GRILLE	⧗	REDUCER

No.	Description	Date
3.		
2.		
1.		

REVISIONS

Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO

THE OAKGROVE WOB
5003 LOT 91 3854 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services

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.

HEAT LOSS 79061 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	16	5	4
1ST FLOOR	10	3	2
BASEMENT	7	1	0

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

Sheet Title

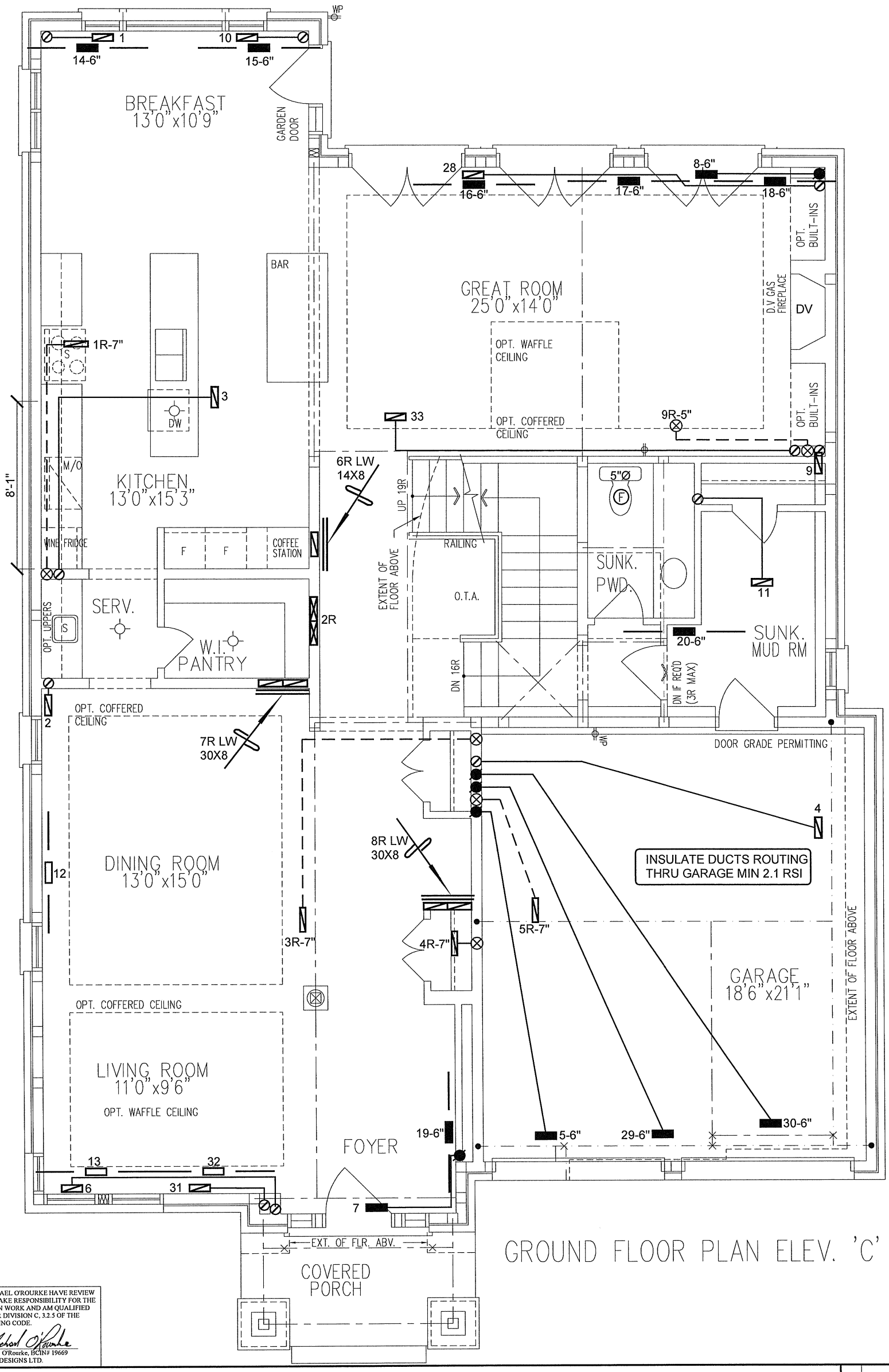
BASEMENT HEATING LAYOUT

Date APRIL/2019

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 82131



GROUND FLOOR PLAN ELEV. 'C'

WOB

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, BCIN# 19669
HVAC DESIGNS LTD.

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
— ▭ —	SUPPLY AIR GRILLE	▬	6" SUPPLY AIR BOOT ABOVE	▭	14"x8" RETURN AIR GRILLE	▭	RETURN AIR STACK ABOVE
— ▬ —	SUPPLY AIR GRILLE 6" BOOT	⊘	SUPPLY AIR STACK FROM 2nd FLOOR	▭	30"x8" RETURN AIR GRILLE	⊠	RETURN AIR STACK 2nd FLOOR
▭	SUPPLY AIR BOOT ABOVE	●	6" SUPPLY AIR STACK 2nd FLOOR	▭	FRA- FLOOR RETURN AIR GRILLE	⧗	REDUCER

No.	Description	Date
3.		
2.		
1.		

REVISIONS

Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO

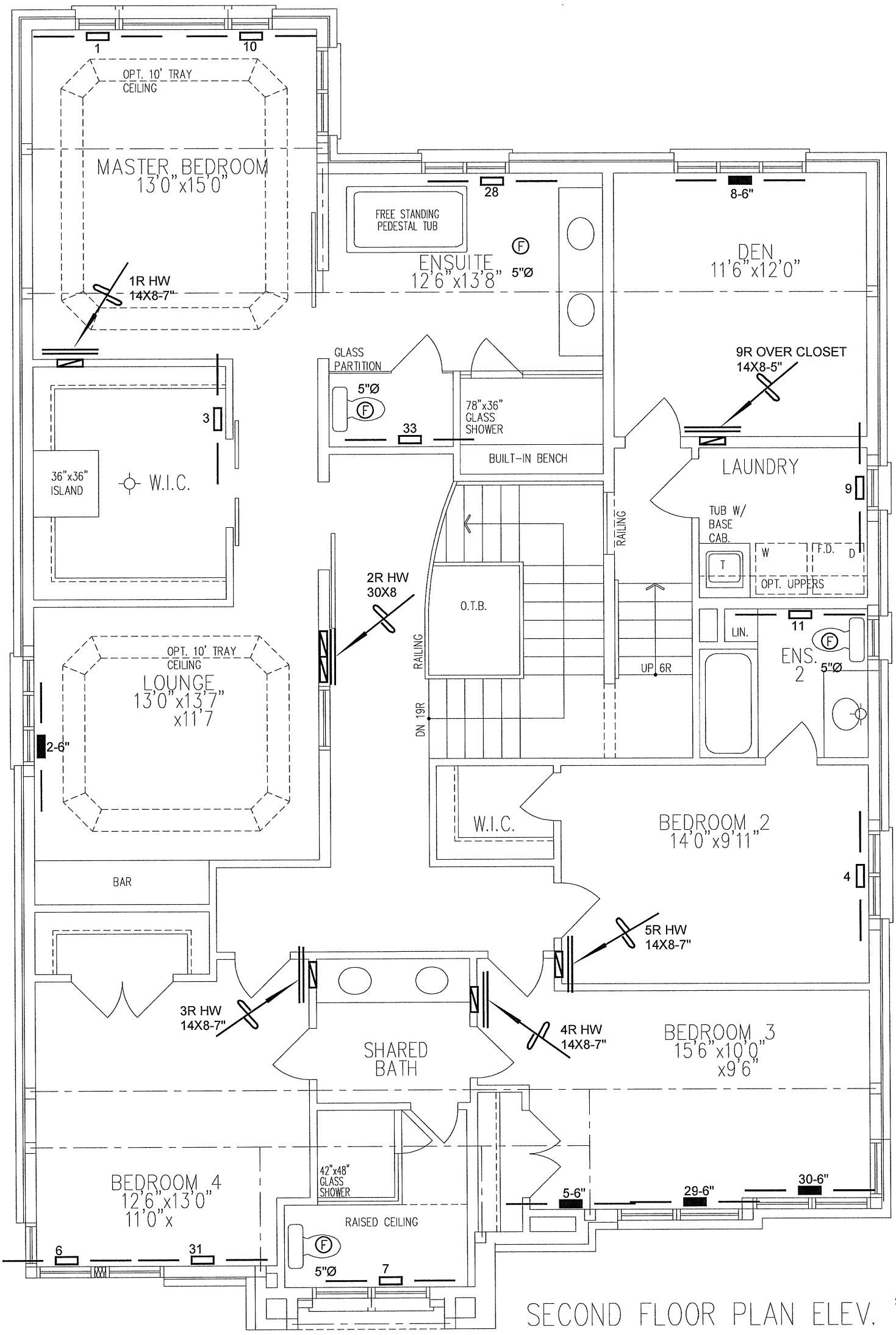
THE OAKGROVE WOB
5003 LOT 91 3854 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services

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 APRIL/2019
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 82131



SECOND FLOOR PLAN ELEV. 'C'

WOB

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, BCIN# 19669
HVAC DESIGNS LTD.

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
— ▭ —	SUPPLY AIR GRILLE	▬	6" SUPPLY AIR BOOT ABOVE	▱	14"x8" RETURN AIR GRILLE	▱	RETURN AIR STACK ABOVE
— ▬ —	SUPPLY AIR GRILLE 6" BOOT	⊘	SUPPLY AIR STACK FROM 2nd FLOOR	▱	30"x8" RETURN AIR GRILLE	⊠	RETURN AIR STACK 2nd FLOOR
▱	SUPPLY AIR BOOT ABOVE	●	6" SUPPLY AIR STACK 2nd FLOOR	▤	FRA- FLOOR RETURN AIR GRILLE	⧗	REDUCER

No.	Description	Date
3.		
2.		
1.		

REVISIONS

Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO

THE OAKGROVE WOB
5003 LOT 91 3854 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services

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

Sheet Title
SECOND FLOOR HEATING LAYOUT

Date APRIL/2019
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 82131