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	**Postal code**	**Plan number/ other description**		
VAUGHAN (WOODBRIDGE)				

B. Individual who reviews and takes responsibility for design activities

Name		Firm		
MICHAEL O'ROURKE		**HVAC DESIGNS LTD.**		
Street address			Unit no.	Lot/con.
375 FINLEY AVE			**202**	**N/A**
Municipality	Postal code	Province	E-mail	
AJAX	**L1S 2E2**	**ONTARIO**	**info@hvacdesigns.ca**	
Telephone number	Fax number		Cell number	
(905) 619-2300	**(905) 619-2375**		( )	

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:** 4006 - THE LILAC ELEV A & B **Project:** PINE VALLEY PH 2

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 11, 2022
Date

Michael O'Rourke
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.

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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: PINE VALLEY PH 2 | ELEV A & B | DATE: Apr-22 | WINTER NATURAL AIR CHANGE RATE 0.370 | HEAT LOSS ΔT °F. 76 | CSA-F280-12
BUILDER: GOLD PARK HOMES | TYPE: 4006 - THE LILAC | GFA: 3373 | LO# 96122 | SUMMER NATURAL AIR CHANGE RATE 0.124 | HEAT GAIN ΔT °F. 13 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			BATH				WIC-3			ENS-2				
EXP. WALL			36			28			10			43			34			17			11				5			14				
CLG. HT.			10			9			9			9			9			9			9				9			9				
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	360			252			90			387			306			153			99				45			126				
GLAZING			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN			
NORTH	21.3	16.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	8	170	128		
EAST	21.3	41.6	0	0	0	0	0	0	0	0	0	52	1107	2161	39	830	1621	0	0	0	0	0	0		0	0	0	0	0	0		
SOUTH	21.3	24.9	0	0	0	52	1107	1295	0	0	0	0	0	0	39	830	971	53	1128	1320	12	255	299		0	0	0	0	0	0		
WEST	21.3	41.6	40	851	1662	8	170	332	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0		
SKYLT.	37.2	101.5	0	0	0	4	149	406	0	0	0	4	149	406	0	0	0	4	149	406	0	0	0		0	0	0	0	0	0		
DOORS	20.1	3.4	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		
NET EXPOSED WALL	4.5	0.8	320	1428	241	192	857	144	90	402	68	335	1495	252	228	1017	171	100	446	75	87	388	65		45	201	34	118	527	89		
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.6	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	315	404	185	159	204	93	160	205	94	303	389	178	180	231	106	255	327	150	110	141	65		40	51	24	126	162	74		
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	24	66	30	0	0	0	20	55	25	12	33	15	30	82	38	0	0	0		0	0	0	0	0	0		
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	327	834	140	0	0	0	0	0	0	0	0	0		40	102	17	0	0	0		
BASEMENT/CRAWL HEAT LOSS			0			0			0			0			0			0			0				0			0				
SLAB ON GRADE HEAT LOSS			0			0			0			0			0			0			0				0			0				
SUBTOTAL HT LOSS			2684			2553			607			4028			2941			2133			785				354			859				
SUB TOTAL HT GAIN				2088			2301			162			3162			2884			1989			429				75			291			
LEVEL FACTOR / MULTIPLIER			0.20	0.29		0.20	0.29		0.20	0.29		0.20	0.29		0.20	0.29		0.20	0.29		0.20	0.29			0.20	0.29		0.20	0.29			
AIR CHANGE HEAT LOSS			779			741			176			1169			854			619			228				103			249				
AIR CHANGE HEAT GAIN				130			144			10			197			180			124			27				5			18			
DUCT LOSS			0			0			0			520			0			0			0				46			0				
DUCT GAIN				0			0			0			412			0			0			0				60			0			
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0		0	0		0	0			
HEAT GAIN APPLIANCES/LIGHTS					521			0			0			521			521			521			521			521			0			
TOTAL HT LOSS BTU/H				3462			3293			783			5717			3795			2752			1013			503			1108				
TOTAL HT GAIN x 1.3 BTU/H					4185			3178			223			5893			4972			3736			1270			858			401			

ROOM USE			DIN			KT/GR			LIB			LAUN				FOY			MUD					LOD			BAS		
EXP. WALL			22			78			53			0				20			33					43			192		
CLG. HT.			11			11			11			11				11			13					10			10		
	FACTORS																													
GRS.WALL AREA	LOSS	GAIN	242			858			583			0				220			429					430			1473		
GLAZING			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN				LOSS	GAIN		LOSS	GAIN	
NORTH	21.3	16.0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0			0	0	0	3	64	48	
EAST	21.3	41.6	0	0	0	0	0	0	39	830	1621	0	0	0		0	0	0	0	0	0			0	0	0	0	0	0	
SOUTH	21.3	24.9	45	958	1120	50	1064	1245	39	830	971	0	0	0		0	0	0	0	0	0			0	0	0	0	0	0	
WEST	21.3	41.6	0	0	0	103	2192	4280	0	0	0	0	0	0		0	0	0	0	0	0			30	638	1247	0	0	0	
SKYLT.	37.2	101.5	0	0	0	0	0	0	0	0	0	4	149	406		0	0	0	0	0	0			0	0	0	0	0	0	
DOORS	20.1	3.4	0	0	0	0	0	0	0	0	0	0	0	0		40	802	135	20	401	68			0	0	0	20	401	68	
NET EXPOSED WALL	4.5	0.8	197	879	148	705	3146	530	505	2254	380	0	0	0		180	803	135	409	1825	307			0	0	0	0	0	0	
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.6	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0			228	820	138	447	1609	271	
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	171	219	100		0	0	0	0	0	0			0	0	0	0	0	0	
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	42	115	53	20	55	25	0	0	0		0	0	0	0	0	0			0	0	0	0	0	0	
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	91	232	39		0	0	0	0	0	0			0	0	0	0	0	0	
BASEMENT/CRAWL HEAT LOSS			0			0			0			0				0			0								6469		
SLAB ON GRADE HEAT LOSS			0			0			0			0				0			0					0					
SUBTOTAL HT LOSS			1837			6517			3968			600				1605			2226					1459			8542		
SUB TOTAL HT GAIN				1269			6108			2996			546				270			375					1385			386		
LEVEL FACTOR / MULTIPLIER			0.30	0.44		0.30	0.44		0.30	0.44		0.30	0.44			0.30	0.44		0.30	0.44						0.50	1.23		
AIR CHANGE HEAT LOSS			809			2869			1747			264				707			980								12292		
AIR CHANGE HEAT GAIN				79			381			187			34				17			23								110	
DUCT LOSS			0			0			0			86				0			0								0		
DUCT GAIN				0			0			0			110				0			0								0	
HEAT GAIN PEOPLE	240		0		0	0		0	0		0	0		0		0		0	0		0			0		0	0		0	
HEAT GAIN APPLIANCES/LIGHTS					521			521			521			521			0			521					0			521	
TOTAL HT LOSS BTU/H				2645			9386			5715			951				2312			3206					1459			20835		
TOTAL HT GAIN x 1.3 BTU/H					2429			9113			4816			1574			373			1195					1800			1323		

TOTAL HEAT GAIN BTU/H: 47616 | TONS: 3.97 | LOSS DUE TO VENTILATION LOAD BTU/H: 1631 | STRUCTURAL HEAT LOSS: 68936 | TOTAL COMBINED HEAT LOSS BTU/H: 70567

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.

Michael O'Rourke.

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

HVAC DESIGNS LTD.

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SITE NAME: PINE VALLEY PH 2
BUILDER: GOLD PARK HOMES

ELEV A & B
TYPE: 4006 - THE LILAC
DATE: Apr-22
GFA: 3373 LO# 96122

HEATING CFM	1575	COOLING CFM	1575
TOTAL HEAT LOSS	68,936	TOTAL HEAT GAIN	47,341
AIR FLOW RATE CFM	22.85	AIR FLOW RATE CFM	33.27

furnace pressure	0.6
furnace filter	0.05
a/c coil pressure	0.2
available pressure for s/a & r/a	0.35
plenum pressure s/a	0.18
max s/a dif press. loss	0.02
min adjusted pressure s/a	0.16
r/a pressure	0.17
r/a grille press. Loss	0.02
adjusted pressure r/a	0.15

$*LENNOX
ML196UH090XE48C 90

FAN SPEED	
LOW	0
MEDLOW	1080
MEDIUM	1190
MEDIUM HIGH	1340
HIGH	1575

AFUE = 96 %
INPUT (BTU/H) = 88,000
OUTPUT (BTU/H) = **85,600**
DESIGN CFM = **1575**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 50 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	14	10	5
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.

RUN #	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-2	BED-3	MBR	ENS-2	DIN	KT/GR	KT/GR	KT/GR	LAUN	KT/GR	FOY	ENS	BED-4	MUD	LIB	LIB
RM LOSS MBH.	1.73	1.65	0.78	2.86	1.90	1.38	1.01	2.86	1.90	1.73	1.11	2.65	2.35	2.35	2.35	0.95	2.35	2.31	1.65	1.38	3.21	2.86	2.86
CFM PER RUN HEAT	40	38	18	65	43	31	23	65	43	40	25	60	54	54	54	22	54	53	38	31	73	65	65
RM GAIN MBH.	2.09	1.59	0.22	2.95	2.49	1.87	1.27	2.95	2.49	2.09	0.40	2.43	2.28	2.28	2.28	1.57	2.28	0.37	1.59	1.87	1.20	2.41	2.41
CFM PER RUN COOLING	70	53	7	98	83	62	42	98	83	70	13	81	76	76	76	52	76	12	53	62	40	80	80
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.16	0.16	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	36	47	21	75	77	38	62	81	76	44	74	31	26	33	31	62	38	37	38	49	47	54	58
EQUIVALENT LENGTH	120	160	190	130	170	180	140	160	140	140	170	150	160	140	90	150	110	150	190	190	180	120	120
TOTAL EFFECTIVE LENGTH	156	207	211	205	247	218	202	241	216	184	244	181	186	173	121	212	148	187	228	239	227	174	178
ADJUSTED PRESSURE	0.11	0.08	0.08	0.08	0.07	0.08	0.09	0.07	0.08	0.09	0.07	0.09	0.09	0.1	0.14	0.08	0.12	0.09	0.08	0.07	0.08	0.1	0.1
ROUND DUCT SIZE	5	5	4	**6**	**6**	5	5	**6**	**6**	5	4	**6**	5	5	5	5	5	5	5	5	5	**6**	**6**
HEATING VELOCITY (ft/min)	294	279	207	331	219	228	169	331	219	294	287	306	396	396	396	162	396	389	279	228	536	331	331
COOLING VELOCITY (ft/min)	514	389	80	500	423	455	308	500	423	514	149	413	558	558	558	382	558	88	389	455	294	408	408
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10
TRUNK	D	D	E	B	A	C	B	B	A	D	B	C	D	D	D	B	D	B	C	B	C	A	A

RUN #	25	26	27	28	29	30
ROOM NAME	BAS	BAS	BAS	BAS	BAS	WIC-3
RM LOSS MBH.	4.46	4.46	4.46	4.46	4.46	0.50
CFM PER RUN HEAT	102	102	102	102	102	11
RM GAIN MBH.	0.62	0.62	0.62	0.62	0.62	0.86
CFM PER RUN COOLING	21	21	21	21	21	29
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.17
ACTUAL DUCT LGH.	28	23	23	32	52	65
EQUIVALENT LENGTH	130	150	120	130	130	200
TOTAL EFFECTIVE LENGTH	158	173	143	162	182	265
ADJUSTED PRESSURE	0.1	0.09	0.11	0.1	0.09	0.06
ROUND DUCT SIZE	**6**	**6**	**6**	**6**	**6**	4
HEATING VELOCITY (ft/min)	520	520	520	520	520	126
COOLING VELOCITY (ft/min)	107	107	107	107	107	333
OUTLET GRILL SIZE	4X10	4X10	4X10	4X10	4X10	3X10
TRUNK	D	D	C	C	A	A

SUPPLY 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 A	329	0.06	9.9	12	x	8	494	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	613	0.06	12.5	18	x	8	613	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	1019	0.06	15.2	26	x	8	705	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	538	0.08	11.1	14	x	8	692	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	1575	0.06	17.9	30	x	10	756	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	x	8	0

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	x	8	0
TRUNK P	0	0.05	0	0	x	8	0
TRUNK Q	0	0.05	0	0	x	8	0
TRUNK R	0	0.05	0	0	x	8	0
TRUNK S	0	0.05	0	0	x	8	0
TRUNK T	0	0.05	0	0	x	8	0
TRUNK U	0	0.05	0	0	x	8	0
TRUNK V	0	0.05	0	0	x	8	0
TRUNK W	0	0.05	0	0	x	8	0
TRUNK X	1575	0.05	18.7	34	x	10	667
TRUNK Y	690	0.05	13.7	22	x	8	565
TRUNK Z	380	0.05	11	14	x	8	489
DROP	1575	0.05	18.7	24	x	14	675

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	155	135	115	130	335	135	145	175	0	0	0	0	0	0	0	250
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.	46	65	85	84	35	63	71	33	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	145	225	225	185	185	230	145	185	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	191	290	310	269	220	293	216	218	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.08	0.05	0.05	0.06	0.07	0.05	0.07	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	7	7.5	7	7	9.6	7.5	7	7.5	0	0	0	0	0	0	0	7.9
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	14	14	14	30	14	14	14	0	0	0	0	0	0	0	24

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.

Michael O'Rourke

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

HVAC DESIGNS LTD.

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Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

TYPE: 4006 - THE LILAC LO # 96122
SITE NAME: PINE VALLEY PH 2 ELEV A & B

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	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.		TOTAL	190.8	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	190.8	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	111.3	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE V150H Location: BSMT

79.5 cfm [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
79.5 CFM	X	76 F	X	1.08	X	0.25

SUPPLEMENTAL FANS BY INSTALLING CONTRACTOR

Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	✓	3.5
BATH	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-2	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE V150H

150 cfm high 35 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-22

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.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 96122 Model: 4006 - THE LILAC Builder: GOLD PARK HOMES Date: 2022-04-11

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1534	10	15340
First	1534	11	16874
Second	1856	9	16704
Third	0	9	0
Fourth	0	9	0
		Total:	48,918.0 ft³
		Total:	1385.2 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.370
SUMMER NATURAL AIR CHANGE RATE	0.124

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-20	42	76
Summer DTDc	24	31	7	13

5.2.3.1 Heat Loss due to Air Leakage

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

0.370 x 384.78 x 42 °C x 1.2 = 7205 W

= **24585 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.124 x 384.78 x 7 °C x 1.2 = 408 W

= **1392 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

80 CFM x 76 °F x 1.08 x 0.25 = **1631 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

80 CFM x 13 °F x 1.08 x 0.25 = **275 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	24,585	10,001	1.229
2	0.3		16,755	0.440
3	0.2		16,943	0.290
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

Michael O'Rourke
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4006 - THE LILAC ELEV A & B **BUILDER:** GOLD PARK HOMES
SFQT: 3373 **LO#** 96122 **SITE:** PINE VALLEY PH 2

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
		WINDOW SHGC	0.50

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):	48918.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 63.0 ft	WIDTH: 33.0 ft	EXPOSED PERIMETER:	192.0 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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

Michael O'Rourke

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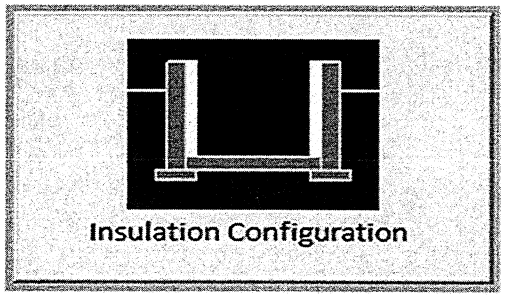
Ajax ON, L1S 2E2
905-619-2300

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):	**19.2**	 Insulation Configuration
Floor Width (m):	**10.1**	
Exposed Perimeter (m):	**0.0**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**2.13**	
Window Area (m^2):	**3.1**	
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):	**1895**	

TYPE: 4006 - THE LILAC ELEV A & B
LO# 96122

Michael O'Rourke BCIN #19669

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

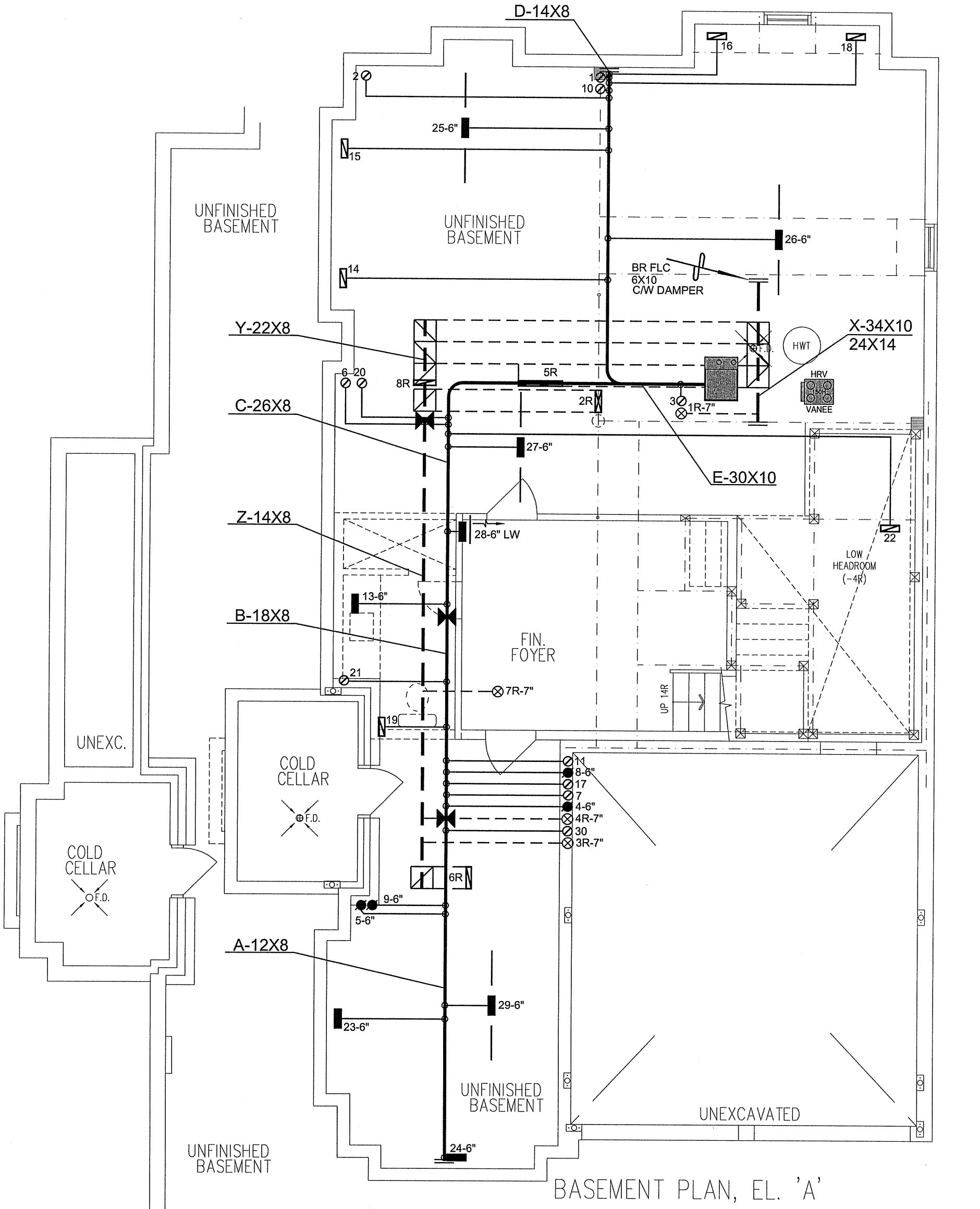
Air Infiltration Residential Load Calculator

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):	7.92	
Building Configuration		
Type:	Detached	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m^3):	1385.2	
Air Leakage/Ventilation		
Air Tightness Type:	Present (1961-) (3.57 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1846.5 cm^2
	3.57	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust
	37.5	37.5
Flue Size		
Flue #:	#1 #2 #3 #4	
Diameter (mm):	0 0 0 0	
Natural Infiltration Rates		
Heating Air Leakage Rate (ACH/H):	**0.370**	
Cooling Air Leakage Rate (ACH/H):	**0.124**	

TYPE: 4006 - THE LILAC ELEV A & B
LO# 96122

Michael O'Rourke BCIN# 19669



BASEMENT PLAN, EL. 'A'

BASEMENT PLAN, EL. 'B'

DECK CONDITIONS ON THIRD PAGE

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.

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 PH 2
VAUGHAN, ONTARIO

THE LILAC - ELEV A & B
4006 CNR 3373 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 70567 BTU/H

UNIT DATA

MAKE	LENNOX
MODEL	ML196UH090XE48C
INPUT	88 MBTU/H
OUTPUT	85.6 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1575 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	14	5	5
1ST FLOOR	10	3	2
BASEMENT	5	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

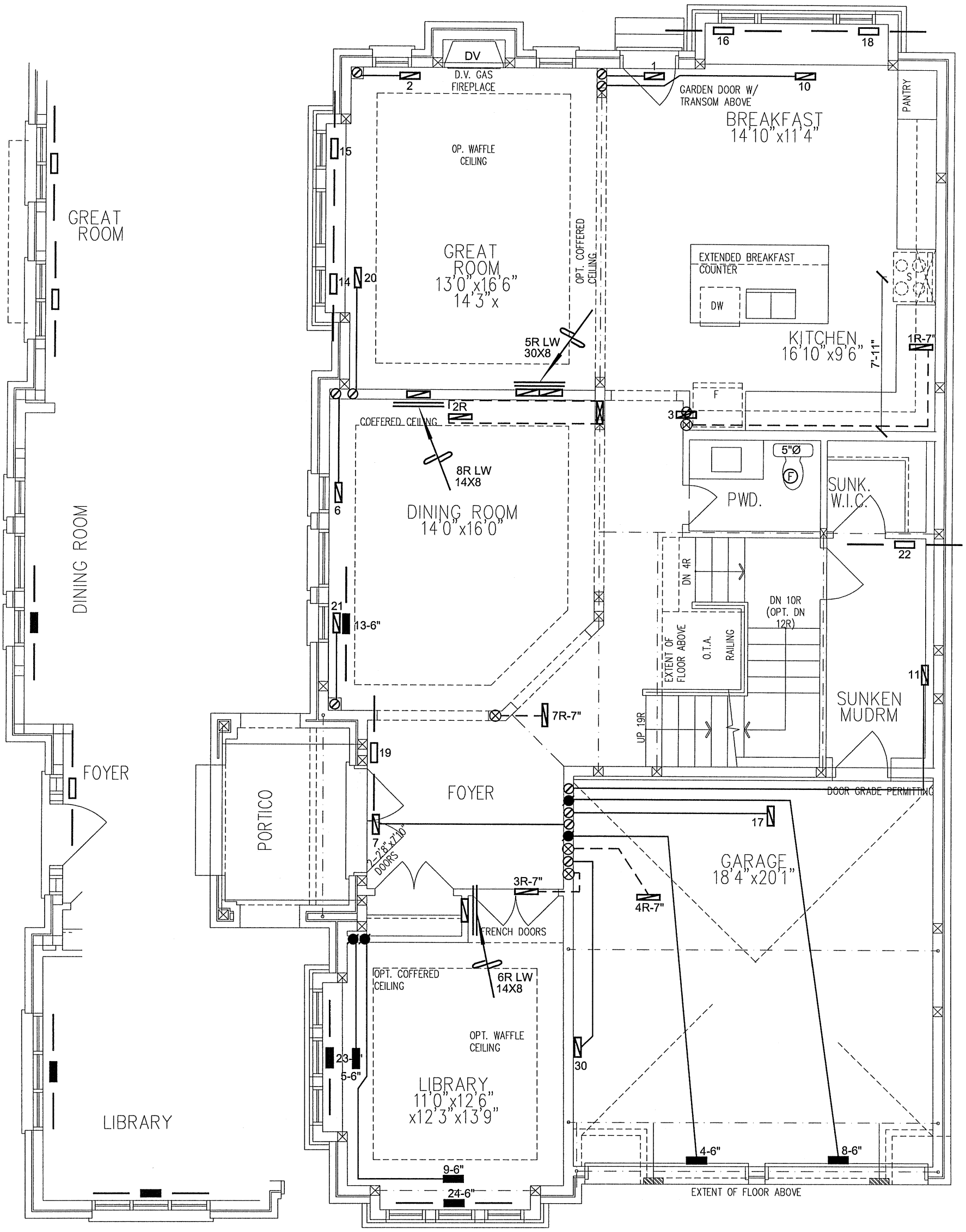
Sheet Title
BASEMENT HEATING LAYOUT

Date APR/2022

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 96122



GROUND FLOOR PLAN, EL. 'B'

GROUND FLOOR PLAN, EL. 'A'

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

CSA-F280-12

PACKAGE A1

HVAC LEGEND

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— ▬ —	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 PH 2
VAUGHAN, ONTARIO

THE LILAC - ELEV A & B
4006 CNR 3373 sqft

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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.

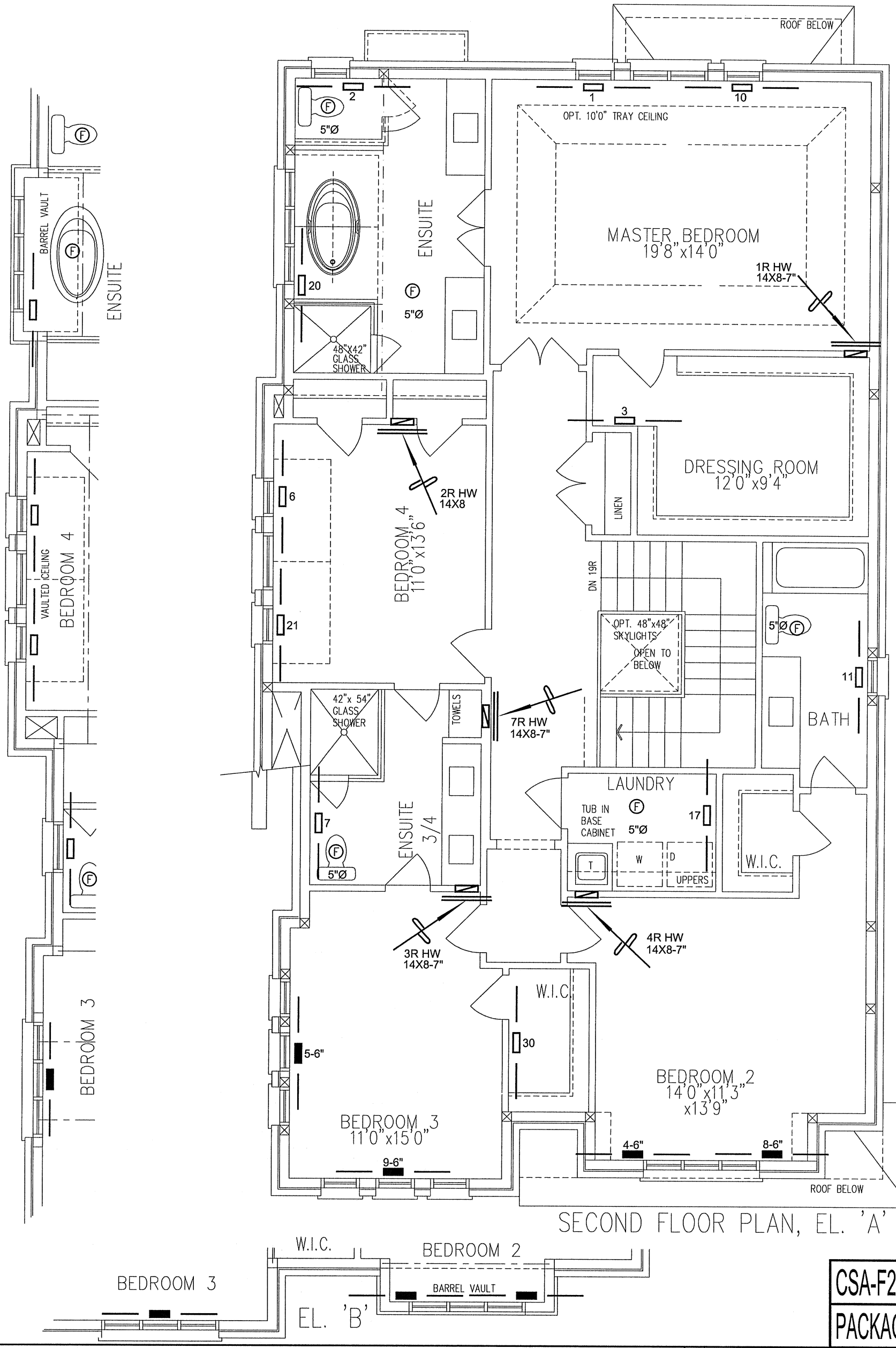
Sheet Title
FIRST FLOOR HEATING LAYOUT

Date APR/2022

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 96122



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

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 PH 2
VAUGHAN, ONTARIO

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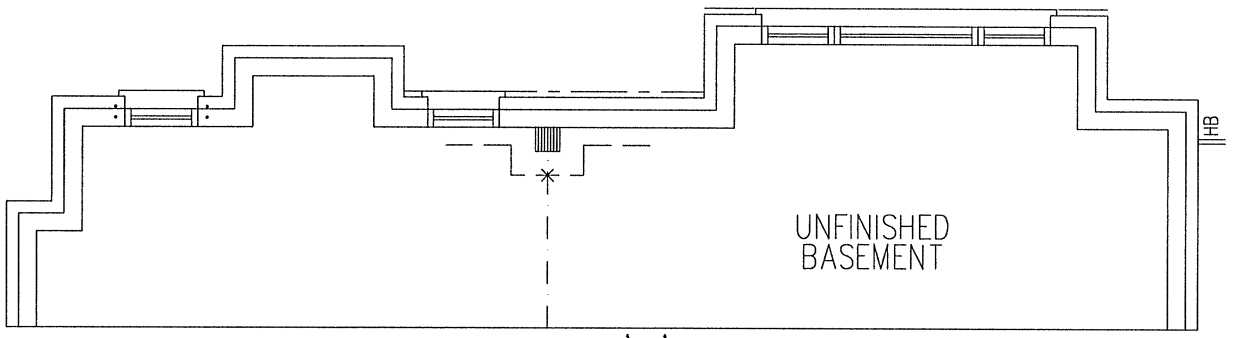
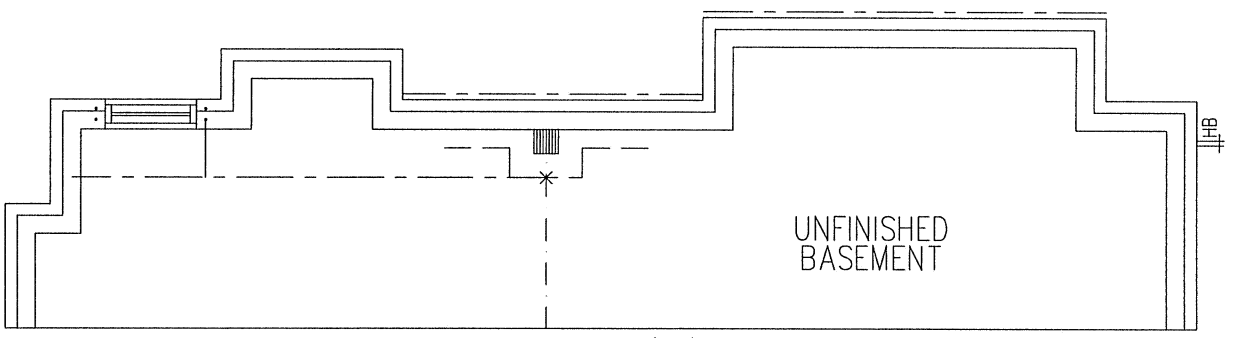
Sheet Title
SECOND FLOOR HEATING LAYOUT

Date APR/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 96122



PART., BASEMENT PLAN ELEV. 'A' – L.O.D. COND.
ELEV. 'B' SIMILAR



PART., BASEMENT PLAN ELEV. 'A' – W.O.D. COND.
ELEV. 'B' SIMILAR

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.

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HVAC DESIGNS LTD.

CSA-F280-12

PACKAGE A1

HVAC LEGEND

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	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
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REVISIONS

Client
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Project Name
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VAUGHAN, ONTARIO

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Sheet Title
ALT DECK
HEATING
LAYOUT

Date APR/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 96122