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 LOT 60 **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.

October 31, 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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Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: PINE VALLEY PH 2 | LOT 60 | DATE: Oct-22 | WINTER NATURAL AIR CHANGE RATE 0.340 | HEAT LOSS ΔT °F. 76 | CSA-F280-12
BUILDER: GOLD PARK HOMES | TYPE: 4006 - THE LILAC | GFA: 3373 | LO# 99197 | SUMMER NATURAL AIR CHANGE RATE 0.114 | 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			WC ENS		
EXP. WALL			36			15			10			37			34			17			11				5			14			14		
CLG. HT.			10			9			9			9			9			9			9				9			9			9		
	FACTORS																																
GRS.WALL AREA	LOSS	GAIN	360			135			90			333			306			153			99				45			126			126		
GLAZING				LOSS	GAIN		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	0	0	0
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	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	0	0	0
WEST	21.3	41.6	40	851	1662	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	332
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	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	0	0	0
NET EXPOSED WALL	4.5	0.8	320	1428	241	83	370	62	90	402	68	281	1254	211	228	1017	171	100	446	75	87	388	65		45	201	34	118	527	89	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	0	0	0
EXPOSED CLG	1.3	0.6	346	444	203	105	135	62	160	205	94	301	386	177	269	345	158	252	323	148	110	141	65		40	51	24	126	162	74	50	64	29
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	23	63	29	0	0	0	20	55	25	12	33	15	30	82	38	0	0	0		0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.4	0	0	0	10	26	4	0	0	0	327	834	140	0	0	0	0	0	0	0	0	0		40	102	17	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				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	
SUBTOTAL HT LOSS				2723			1849			607			3785			3056			2129			785				354			859			761	
SUB TOTAL HT GAIN					2106			1858			162			3121			2936			1987			429			75			291			450	
LEVEL FACTOR / MULTIPLIER			0.20	0.27		0.20	0.27		0.20	0.27		0.20	0.27		0.20	0.27		0.20	0.27		0.20	0.27			0.20	0.27		0.20	0.27		0.20	0.27	
AIR CHANGE HEAT LOSS				729			495			162			1013			818			570			210				95			230			204	
AIR CHANGE HEAT GAIN					128			113			10			190			179			121			26			5			18			27	
DUCT LOSS				0			234			0			480			0			0			0				45			0			0	
DUCT GAIN					0			197			0			407			0			0			0				60			0			0
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0		0		0		0	0		0	
HEAT GAIN APPLIANCES/LIGHTS					521			0			0			521			521			521			521				521			0			0
TOTAL HT LOSS BTU/H				3452			2579			769			5277			3873			2699			995				494			1088			965	
TOTAL HT GAIN x 1.3 BTU/H					4206			2819			223			5823			5039			3730			1269				858			401			621

ROOM USE			DIN				KT/GR			LIB			LAUN				FOY			MUD					BAS		
EXP. WALL			22				74			53			0				20			33					192		
CLG. HT.			11				11			11			11				11			13					10		
	FACTORS																										
GRS.WALL AREA	LOSS	GAIN	242				814			583			0				220			429					1344		
GLAZING				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			4	85	64
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
SOUTH	21.3	24.9	45	958	1120		50	1064	1245	39	830	971	0	0	0		0	0	0	0	0	0			4	85	100
WEST	21.3	41.6	0	0	0		103	2192	4280	0	0	0	0	0	0		0	0	0	0	0	0			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
DOORS	20.1	3.4	0	0	0		0	0	0	0	0	0	0	0	0		40	802	135	20	401	68			20	401	68
NET EXPOSED WALL	4.5	0.8	197	879	148		661	2950	497	505	2254	380	0	0	0		180	803	135	409	1825	307			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			576	2073	349
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
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0		26	71	33	20	55	25	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
BASEMENT/CRAWL HEAT LOSS				0				0			0			0				0			0					6583	
SLAB ON GRADE HEAT LOSS				0				0			0			0				0			0						
SUBTOTAL HT LOSS				1837				6277			3968			600				1605			2226					9227	
SUB TOTAL HT GAIN					1269				6054			2996			546				270			375						580
LEVEL FACTOR / MULTIPLIER			0.30	0.41			0.30	0.41		0.30	0.41		0.30	0.41			0.30	0.41		0.30	0.41				0.50	1.23	
AIR CHANGE HEAT LOSS				755				2579			1631			247				660			915					11310	
AIR CHANGE HEAT GAIN					77				369			183			33				16			23						35
DUCT LOSS				0				0			0			85				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
HEAT GAIN APPLIANCES/LIGHTS					521				521			521			521				0			521						521
TOTAL HT LOSS BTU/H				2591				8856			5599			932				2265			3141					20537	
TOTAL HT GAIN x 1.3 BTU/H					2427				9028			4810			1573				373			1195						1478

TOTAL HEAT GAIN BTU/H: 46148 | TONS: 3.85 | LOSS DUE TO VENTILATION LOAD BTU/H: 1631 | STRUCTURAL HEAT LOSS: 66113 | TOTAL COMBINED HEAT LOSS BTU/H: 67744

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 LOT 60
BUILDER: GOLD PARK HOMES TYPE: 4006 - THE LILAC DATE: Oct-22 GFA: 3373 LO# 99197

HEATING CFM	1575	COOLING CFM	1575	furnace pressure	0.6
TOTAL HEAT LOSS	66,113	TOTAL HEAT GAIN	45,874	furnace filter	0.05
AIR FLOW RATE CFM	23.82	AIR FLOW RATE CFM	34.33	a/c coil pressure	0.2
				available pressure for s/a & r/a	0.35

$*LENNOX
ML196UH090XE48C 90

AFUE = 96 %
INPUT (BTU/H) = 88,000
OUTPUT (BTU/H) = **85,600**

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

DESIGN CFM = **1575** CFM @ .6 " E.S.P.

TEMPERATURE RISE 50 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	15	10	5
R/A	0	0	5	3	1

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

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	WC 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	0.96	0.77	1.76	1.94	1.35	0.99	1.76	1.94	1.73	1.09	2.59	2.21	2.21	2.21	0.93	2.21	2.27	2.58	1.35	3.14	2.80	2.80
CFM PER RUN HEAT	41	23	18	42	46	32	24	42	46	41	26	62	53	53	53	22	53	54	61	32	75	67	67
RM GAIN MBH.	2.10	0.62	0.22	1.94	2.52	1.86	1.27	1.94	2.52	2.10	0.40	2.43	2.26	2.26	2.26	1.57	2.26	0.37	2.82	1.86	1.19	2.41	2.41
CFM PER RUN COOLING	72	21	8	67	86	64	44	67	86	72	14	83	77	77	77	54	77	13	97	64	41	83	83
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.16
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	0.07	0.07	0.08	0.09	0.09
ROUND DUCT SIZE	5	4	4	**6**	**6**	5	5	**6**	**6**	5	4	**6**	5	5	5	5	5	5	**6**	5	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	301	264	207	214	235	235	176	214	235	301	298	316	389	389	389	162	389	396	311	235	382	342	342
COOLING VELOCITY (ft/min)	529	241	92	342	438	470	323	342	438	529	161	423	565	565	565	396	565	95	495	470	209	423	423
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	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	31
ROOM NAME	BAS	BAS	BAS	BAS	BAS	WIC-3	BED-2
RM LOSS MBH.	4.11	4.11	4.11	4.11	4.11	0.49	1.76
CFM PER RUN HEAT	98	98	98	98	98	12	42
RM GAIN MBH.	0.30	0.30	0.30	0.30	0.30	0.86	1.94
CFM PER RUN COOLING	10	10	10	10	10	29	67
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.17	0.17
ACTUAL DUCT LGH.	28	23	23	32	52	65	77
EQUIVALENT LENGTH	130	150	120	130	130	200	160
TOTAL EFFECTIVE LENGTH	158	173	143	162	182	265	237
ADJUSTED PRESSURE	0.1	0.09	0.11	0.1	0.09	0.06	0.07
ROUND DUCT SIZE	**6**	**6**	**6**	**6**	**6**	4	**6**
HEATING VELOCITY (ft/min)	500	500	500	500	500	138	214
COOLING VELOCITY (ft/min)	51	51	51	51	51	333	342
OUTLET GRILL SIZE	4X10	4X10	4X10	4X10	4X10	3X10	4X10
TRUNK	D	D	C	C	A	A	B

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	336	0.06	10	14	x	8	432	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	620	0.06	12.6	22	x	8	507	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	1046	0.06	15.3	28	x	8	672	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	513	0.08	10.9	14	x	8	660	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	1577	0.06	17.9	30	x	10	757	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	345	135	145	175	0	0	0	0	0	0	0	240
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	9.7	7.5	7	7.5	0	0	0	0	0	0	0	7.8
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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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

TYPE: 4006 - THE LILAC LO # 99197
SITE NAME: PINE VALLEY PH 2 LOT 60

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	6	@ 10.6 cfm	63.6	cfm
Other Rooms	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.		TOTAL	201.4	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	201.4	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	121.9	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: October-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.

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

CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 99197 Model: 4006 - THE LILAC Builder: GOLD PARK HOMES Date: 10/31/2022

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	0.340
SUMMER NATURAL AIR CHANGE RATE	0.114

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

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

0.340 x 384.78 x 42 °C x 1.2 = 6629 W

= **22620 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.114 x 384.78 x 7 °C x 1.2 = 375 W

= **1281 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	22,620	9,227	1.226
2	0.3		16,515	0.411
3	0.2		16,907	0.268
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
BCIN# 19669

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4006 - THE LILAC LOT 60 **BUILDER:** GOLD PARK HOMES
SFQT: 3373 **LO#** 99197 **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

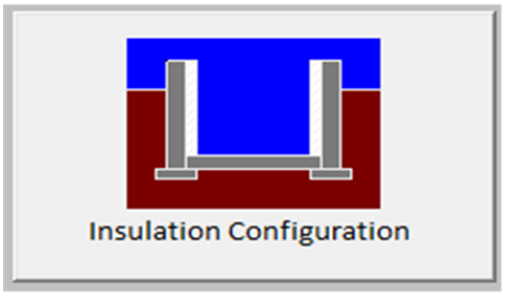
Michael O'Rourke

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):	**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):	**0.7**	
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):		**1929**

TYPE: 4006 - THE LILAC LOT 60
LO# 99197

Michael O'Rourke BCIN #19669

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
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Air Infiltration Residential Load Calculator

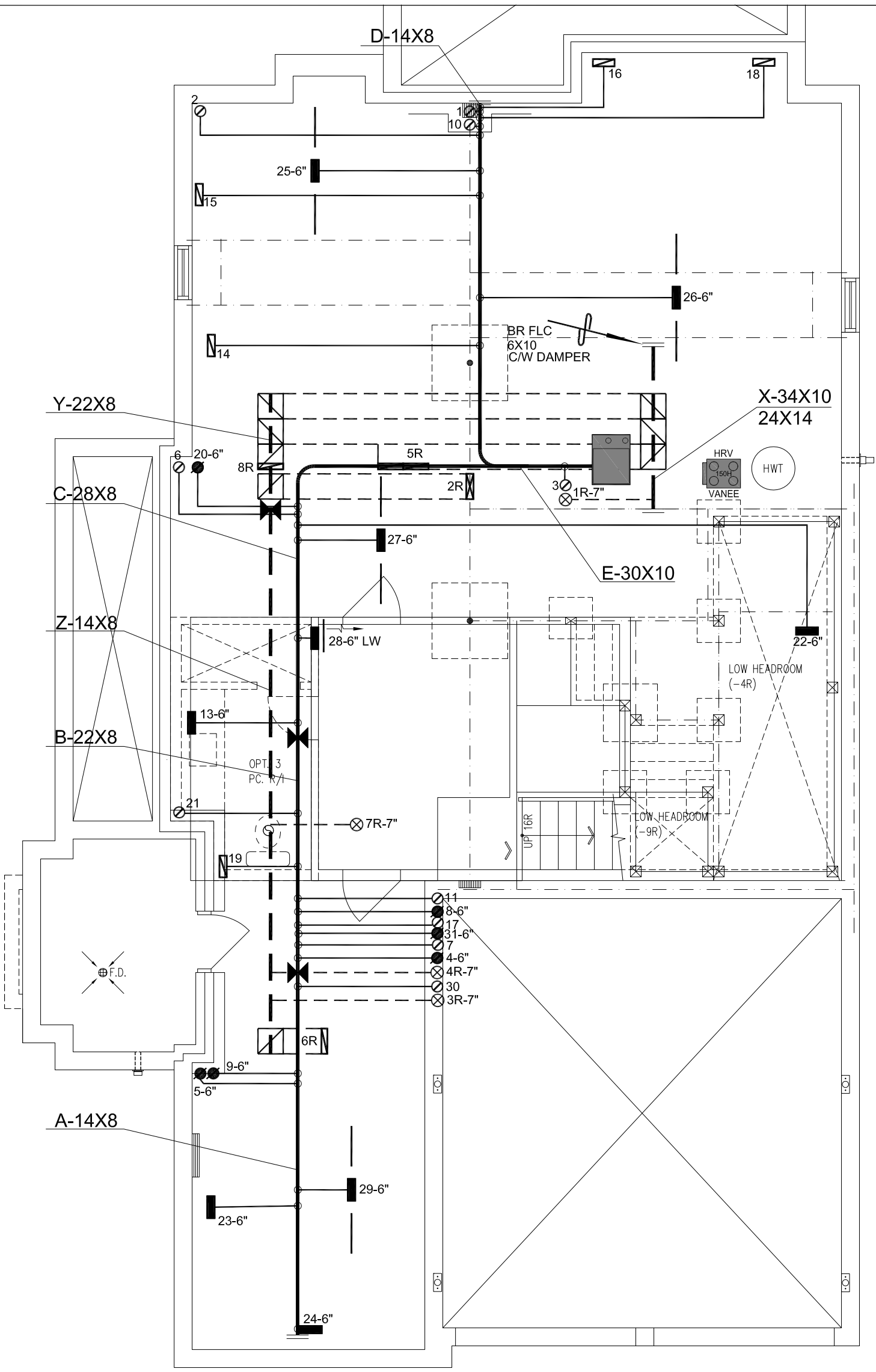
Supplemental tool for CAN/CSA-F280

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):	7.01
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 37.5 / Total Exhaust 37.5
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.340**
Cooling Air Leakage Rate (ACH/H):	**0.114**

TYPE: 4006 - THE LILAC LOT 60

LO# 99197

Michael O'Rourke BCIN# 19669



BASEMENT PLAN, EL. 'B'

LOT 60
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.		

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY PH 2
VAUGHAN, ONTARIO

THE LILAC - LOT 60
4006 CNR 3373 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
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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 67744 BTU/H

UNIT DATA

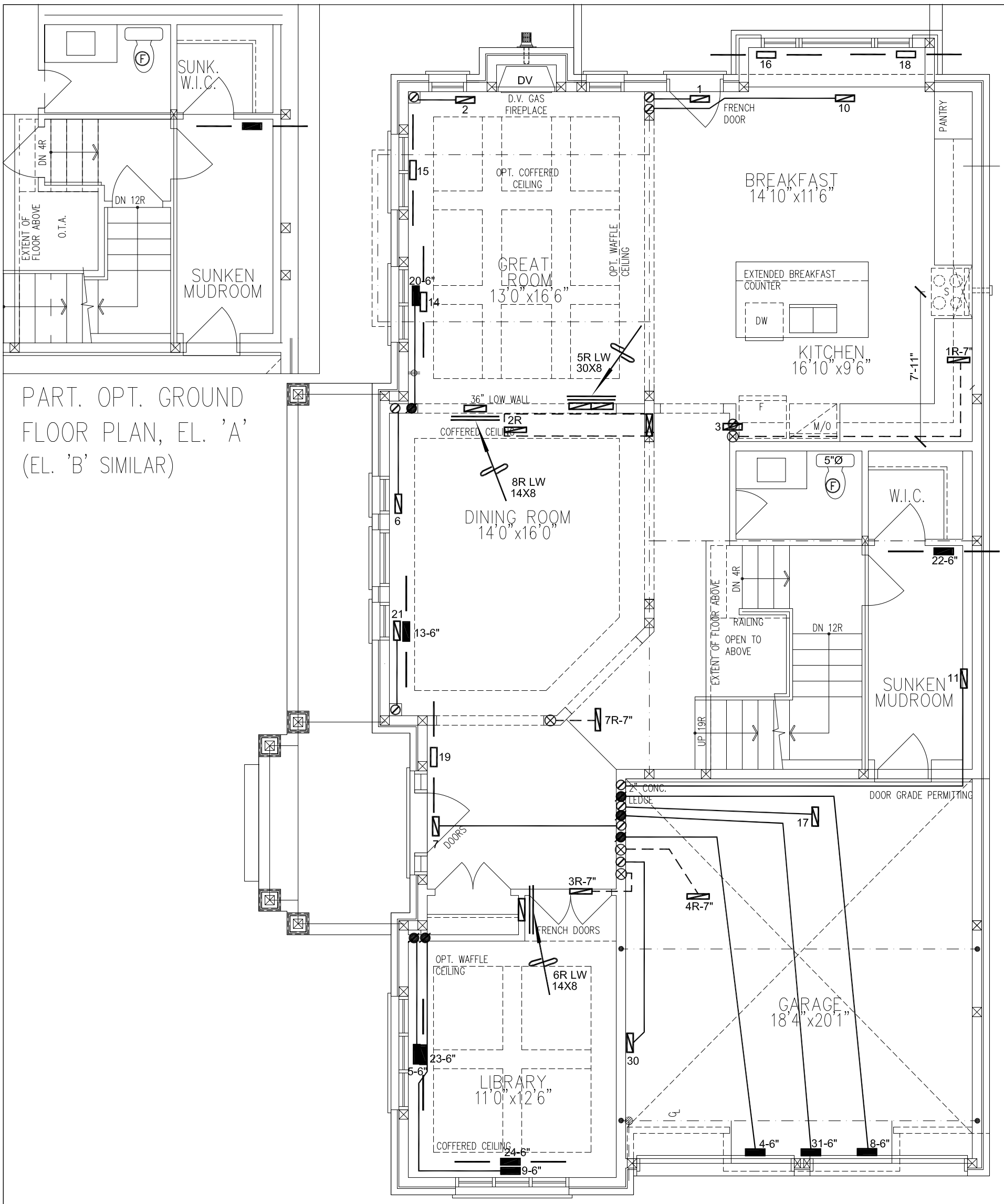
MAKE	LENNOX	
MODEL	ML196UH090XE48C	
INPUT	88	MBTU/H
OUTPUT	85.6	MBTU/H
COOLING	4.0	TONS
FAN SPEED	1575	cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	15	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 OCT/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 99197



PART. OPT. GROUND FLOOR PLAN, EL. 'A'
(EL. 'B' SIMILAR)

GROUND FLOOR PLAN, EL. 'B'

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

LOT 60
CSA-F280-12
PACKAGE A1

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4006 CNR 3373 sqft

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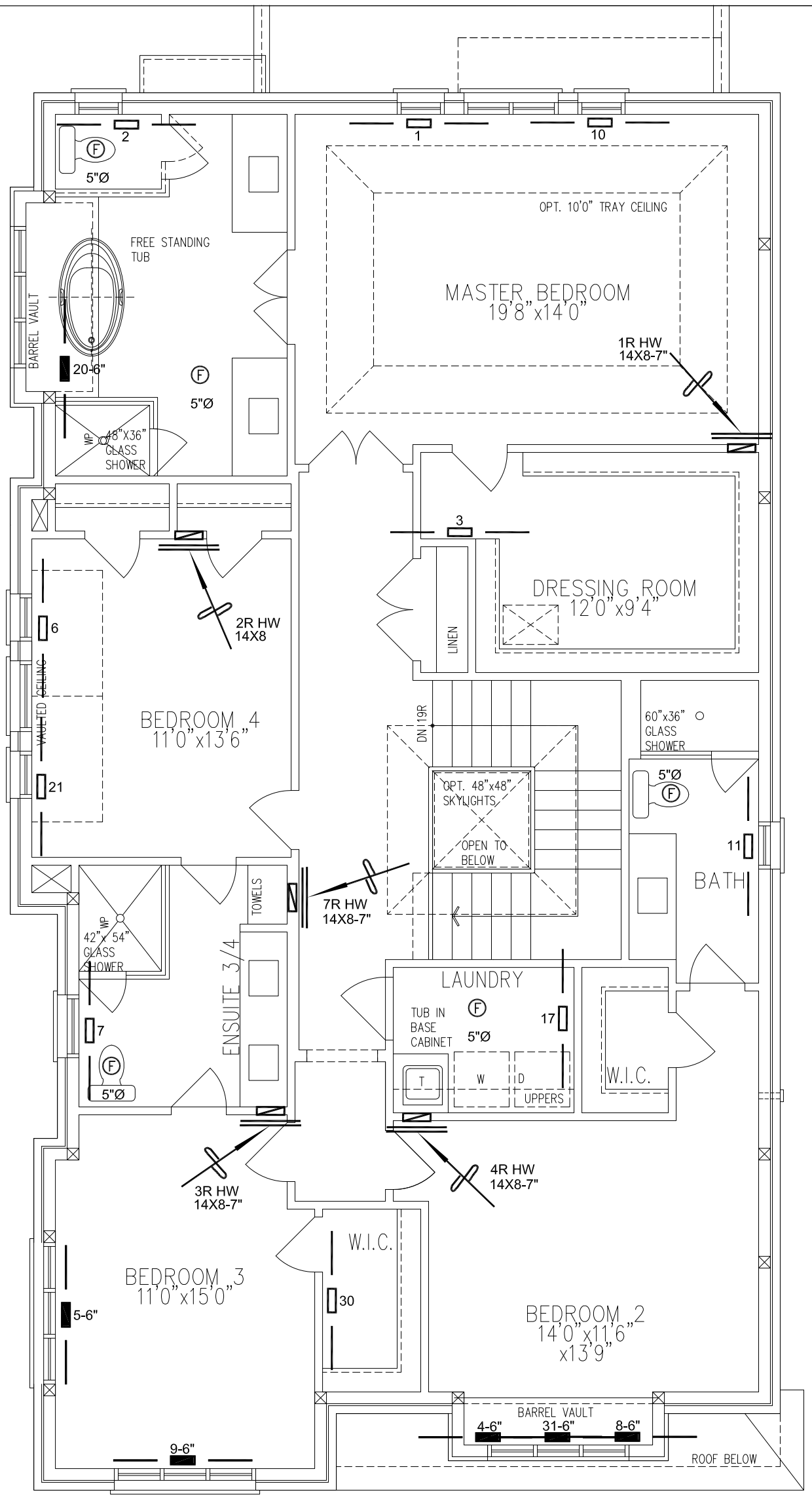
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date OCT/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 99197



SECOND FLOOR PLAN, EL. 'B'

LOT 60

CSA-F280-12

PACKAGE A1

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HVAC LEGEND

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SECOND FLOOR HEATING LAYOUT

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LO# 99197