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:** 4002 THE VALLEYVIEW **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.

January 23, 2018
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.

HVAC DESIGNS LTD.

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

SITE NAME: PINE VALLEY & TESTON — DATE: Jan-18 — WINTER NATURAL AIR CHANGE RATE 0.340 — HEAT LOSS ΔT °F. 76 — CSA-F280-12

BUILDER: GOLD PARK HOMES — TYPE: 4002 THE VALLEYVIEW — GFA: 2968 — LO# 77457 — SUMMER NATURAL AIR CHANGE RATE 0.124 — HEAT GAIN ΔT °F. 16 — SB-12 PACKAGE A1

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			ENS-2/3			COMP				ENS-4				
EXP. WALL			40			25			6			38			33			13			11			14				6				
CLG. HT.			10			9			9			9			10			9			9			9				9				
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	400			225			54			342			330			117			99			126				54				
GLAZING			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	0	0	0	0	0	0	383	303	0	0	0	0	0	0		8	170	135		
EAST	21.3	42.4	0	0	0	0	0	0	0	0	0	45	958	1908	50	1064	2120	0	0	0	24	511	1017	0	0	0		0	0	0		
SOUTH	21.3	25.7	0	0	0	14	298	360	0	0	0	9	192	232	0	0	0	0	0	0	0	0	0	21	447	541		0	0	0		
WEST	21.3	42.4	36	766	1526	20	426	848	0	0	0	0	0	0	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		
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		
NET EXPOSED WALL	4.5	0.9	364	1624	338	191	852	177	54	241	50	288	1285	267	280	1250	260	99	442	92	75	335	70	105	469	97		46	205	43		
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		
EXPOSED CLG	1.3	0.6	320	411	204	156	200	100	72	92	46	204	262	130	168	216	107	260	334	166	153	196	98	168	216	107		120	154	77		
NO ATTIC EXPOSED CLG	2.7	1.4	10	27	14	0	0	0	0	0	0	60	165	82	30	82	41	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	30	77	16	198	505	105	0	0	0	153	390	81	0	0	0		20	51	11		
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				2829			1776			333			2938			3117			1159			1432			1131			581				
SUB TOTAL HT GAIN					2082			1485			96			2635			2633			560			1266			745			264			
LEVEL FACTOR / MULTIPLIER			0.20	0.26		0.20	0.26		0.20	0.26		0.20	0.26		0.20	0.26		0.20	0.26		0.20	0.26		0.20	0.26			0.20	0.26			
AIR CHANGE HEAT LOSS				730			458			86			758			804			299			370			292			150				
AIR CHANGE HEAT GAIN					202			144			9			256			256			54			123			72			26			
DUCT LOSS				0			0			0			370			392			0			180			0			73				
DUCT GAIN					0			0			0			381			381			0			139			0			29			
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					683			0			0			683			683			683			0			683			0			
TOTAL HT LOSS BTU/H				3559			2234			419			4065			4313			1457			1982			1423			803				
TOTAL HT GAIN x 1.3 BTU/H					4481			2118			137			5453			5450			1999			1986			1951			415			

ROOM USE			DIN				KT/GT				LAUN			PWD			FOY								BAS		
EXP. WALL			13				90				23			6			45								174		
CLG. HT.			11				11				12			13			11								10		
	FACTORS																										
GRS.WALL AREA	LOSS	GAIN	143				990				276			78			495								1218		
GLAZING			LOSS	GAIN			LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN							LOSS	GAIN	
NORTH	21.3	16.8	26	553	437		0	0	0		10	213	168	0	0	0	0	0	0						14	298	235
EAST	21.3	42.4	0	0	0		0	0	0		0	0	0	0	0	0	35	745	1484						0	0	0
SOUTH	21.3	25.7	0	0	0		24	511	618		0	0	0	8	170	206	0	0	0						0	0	0
WEST	21.3	42.4	0	0	0		117	2490	4960		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
DOORS	25.2	5.2	0	0	0		0	0	0		20	505	105	0	0	0	20	505	105						20	505	105
NET EXPOSED WALL	4.5	0.9	117	522	109		849	3789	788		246	1098	228	70	312	65	440	1964	408						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						522	1878	391
EXPOSED CLG	1.3	0.6	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		10	27	14		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
BASEMENT/CRAWL HEAT LOSS				0				0				0			0			0							5858		
SLAB ON GRADE HEAT LOSS				0				0				0			0			0									
SUBTOTAL HT LOSS				1075				6817				1816			483			3213							8539		
SUB TOTAL HT GAIN					546				6379				501			271			1997								731
LEVEL FACTOR / MULTIPLIER			0.30	0.44			0.30	0.44			0.30	0.44		0.30	0.44		0.30	0.44							0.50	1.16	
AIR CHANGE HEAT LOSS				475				3011				802			213			1419							9866		
AIR CHANGE HEAT GAIN					53				620				49			26			194								71
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
HEAT GAIN APPLIANCES/LIGHTS					683				683				683			0			0								0
TOTAL HT LOSS BTU/H				1550				9827				2617			696			4633							18406		
TOTAL HT GAIN x 1.3 BTU/H					1666				9986				1603			386			2848								1043

TOTAL HEAT GAIN BTU/H: 42184 — TONS: 3.52 — LOSS DUE TO VENTILATION LOAD BTU/H: 3181 — STRUCTURAL HEAT LOSS: 57985 — TOTAL COMBINED HEAT LOSS BTU/H: 61166

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

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

TYPE: 4002 THE VALLEYVIEW DATE: Jan-18 GFA: 2968 LO# 77457

HEATING CFM	1255		COOLING CFM	1255		furnace pressure	0.6																	
TOTAL HEAT LOSS	57,985		TOTAL HEAT GAIN	41,523		furnace filter	0.05																	
AIR FLOW RATE CFM	21.64		AIR FLOW RATE CFM	30.22		a/c coil pressure	0.2																	
						available pressure																		
						for s/a & r/a	0.35																	
						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
EL296UH090XE48C 90

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

FAN SPEED	
LOW	0
MEDLOW	0
MEDIUM	1105
MEDIUM HIGH	1255
HIGH	1525

DESIGN CFM = 1255
CFM @ .6 " E.S.P.

TEMPERATURE RISE 63 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	12	8	5
R/A	0	0	5	2	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	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-2/3	COMP	BED-2	MBR	ENS-4	DIN	KT/GT	KT/GT	KT/GT	KT/GT	LAUN	PWD	FOY	BED-3	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.78	2.23	0.42	2.03	2.16	1.46	1.98	1.42	2.03	1.78	0.80	1.55	2.46	2.46	2.46	2.46	2.62	0.70	4.63	2.16	3.68	3.68	3.68	3.68
CFM PER RUN HEAT	39	48	9	44	47	32	43	31	44	39	17	34	53	53	53	53	57	15	100	47	80	80	80	80
RM GAIN MBH.	2.24	2.12	0.14	2.73	2.73	2.00	1.99	1.95	2.73	2.24	0.41	1.67	2.50	2.50	2.50	2.50	1.60	0.39	2.85	2.73	0.21	0.21	0.21	0.21
CFM PER RUN COOLING	68	64	4	82	82	60	60	59	82	68	13	50	75	75	75	75	48	12	86	82	6	6	6	6
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	50	58	58	61	51	38	48	42	67	35	47	10	41	48	40	30	11	48	44	57	40	27	26	28
EQUIVALENT LENGTH	210	150	150	180	170	180	140	190	190	120	180	130	130	130	150	130	200	210	140	160	140	170	120	150
TOTAL EFFECTIVE LENGTH	260	208	208	241	221	218	188	232	257	155	227	140	171	178	190	160	211	258	184	217	180	197	146	178
ADJUSTED PRESSURE	0.07	0.08	0.08	0.07	0.07	0.08	0.09	0.07	0.06	0.11	0.08	0.12	0.1	0.1	0.09	0.11	0.08	0.07	0.09	0.07	0.1	0.09	0.12	0.1
ROUND DUCT SIZE	5	5	4	**6**	**6**	5	5	5	**6**	5	4	4	5	5	5	5	5	4	**6**	**6**	5	5	5	5
HEATING VELOCITY (ft/min)	286	352	103	224	240	235	316	228	224	286	195	390	389	389	389	389	419	172	510	240	587	587	587	587
COOLING VELOCITY (ft/min)	499	470	46	418	418	441	441	433	418	499	149	574	551	551	551	551	352	138	438	418	44	44	44	44
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10
TRUNK	A	A	A	C	D	B	D	D	C	B	D	B	A	A	A	B	B	C	C	D	A	A	B	B

RUN #	25
ROOM NAME	BAS
RM LOSS MBH.	3.68
CFM PER RUN HEAT	80
RM GAIN MBH.	0.21
CFM PER RUN COOLING	6
ADJUSTED PRESSURE	0.17
ACTUAL DUCT LGH.	43
EQUIVALENT LENGTH	150
TOTAL EFFECTIVE LENGTH	193
ADJUSTED PRESSURE	0.09
ROUND DUCT SIZE	5
HEATING VELOCITY (ft/min)	587
COOLING VELOCITY (ft/min)	44
OUTLET GRILL SIZE	3X10
TRUNK	C

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	415	0.07	10.4	12	x	8	623	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	790	0.07	13.3	20	x	8	711	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	283	0.06	9.4	10	x	8	509	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	468	0.06	11.3	14	x	8	602	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	0	0.00	0	0	x	8	0	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	1255	0.05	17.2	28	x	10	645
TRUNK Y	475	0.05	11.9	16	x	8	534
TRUNK Z	610	0.05	13.1	20	x	8	549
DROP	1255	0.05	17.2	24	x	12	628

RETURN AIR #	1	2	3	4	5	6	7									BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	135	110	120	120	110	300	175	0	0	0	0	0	0	0	0	185
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.	51	58	57	34	42	28	35	1	1	1	1	1	1	1	1	18
EQUIVALENT LENGTH	235	205	165	185	225	190	185	0	0	0	0	0	0	0	0	215
TOTAL EFFECTIVE LH	286	263	222	219	267	218	220	1	1	1	1	1	1	1	1	233
ADJUSTED PRESSURE	0.05	0.06	0.07	0.07	0.06	0.07	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.06
ROUND DUCT SIZE	7.5	6.6	6.6	6.6	6.6	9.2	7.5	0	0	0	0	0	0	0	0	8
INLET GRILL SIZE	8	8	8	8	8	8	8	0	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	14	30	14	0	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.

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

HVAC DESIGNS LTD.

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TYPE: 4002 THE VALLEYVIEW LO # 77457
SITE NAME: PINE VALLEY & TESTON

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	5	@ 10.6 cfm	53.0	cfm
Table 9.32.3.A.		TOTAL	180.2	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	180.2	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	25.2	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
ENS-2/3	QTXEN050C	50	✓	0.3
ENS-4	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: January-18

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
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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 77457 Model: 4002 THE VALLEYVIEW Builder: GOLD PARK HOMES Date: 1/23/2018

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1322	10	13220
First	1322	11	14542
Second	1657	9	14913
Third	0	9	0
Fourth	0	9	0
		Total:	42,675.0 ft³
		Total:	1208.4 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.340
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	22	31	9	16

5.2.3.1 Heat Loss due to Air Leakage

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

0.340 x 335.67 x 42 °C x 1.2 = 5783 W

= **19733 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 335.67 x 9 °C x 1.2 = 438 W

= **1496 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	19,733	8,539	1.155
2	0.3		13,404	0.442
3	0.2		15,294	0.258
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

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4002 THE VALLEYVIEW **BUILDER:** GOLD PARK HOMES
SFQT: 2968 **LO#** 77457 **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):	42675.0	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: 55.0 ft	WIDTH: 32.0 ft	EXPOSED PERIMETER:	174.0 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

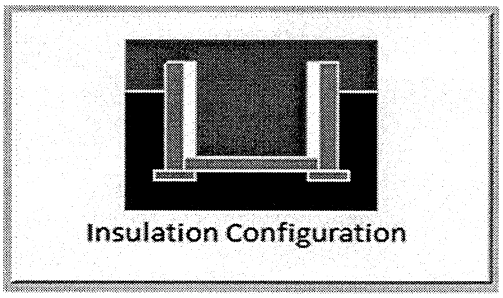
Michael O'Rourke

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):	**16.8**	 Insulation Configuration
Floor Width (m):	**9.8**	
Exposed Perimeter (m):	**0.0**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**2.13**	
Window Area (m^2):	**1.3**	
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):		**1716**

TYPE: 4002 THE VALLEYVIEW
LO# 77457

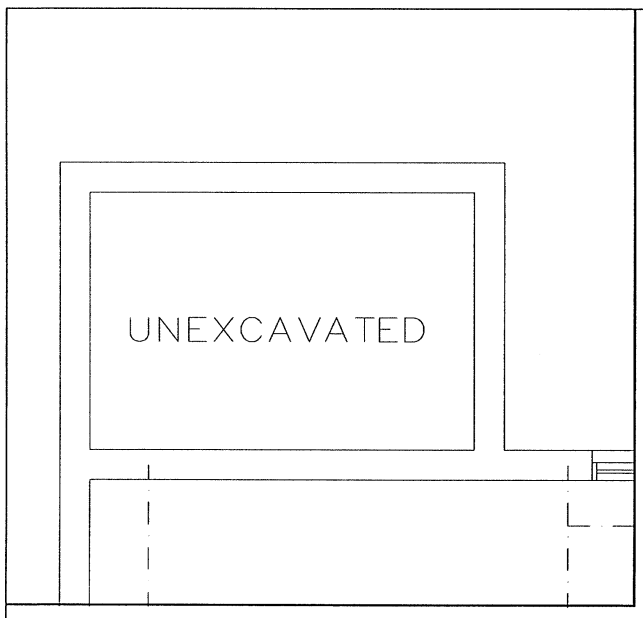
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

Air Infiltration Residential Load Calculator

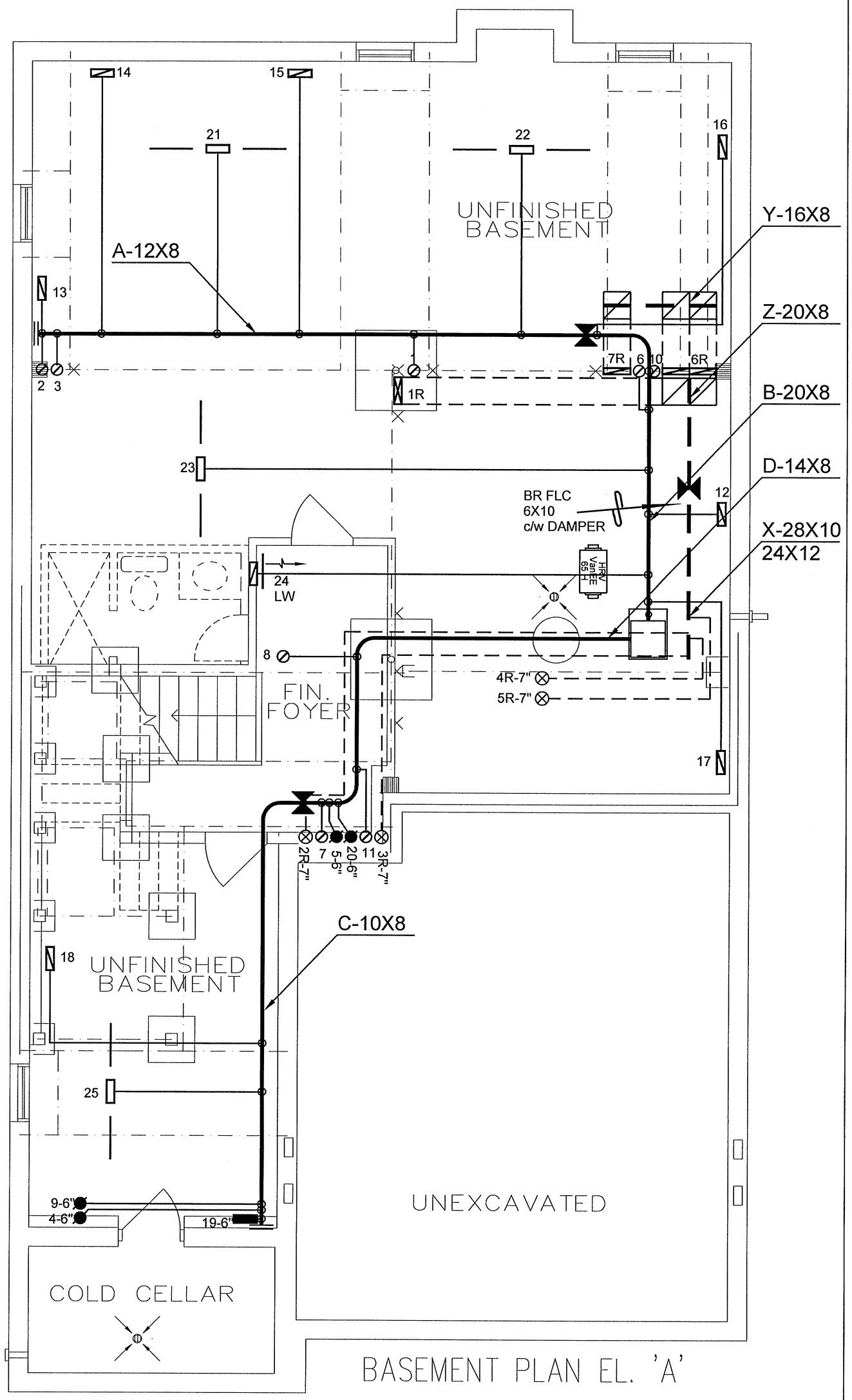
Supplemental tool for CAN/CSA-F280

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):	7.01
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	1208.4
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 1610.9 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):	**0.340**
Cooling Air Leakage Rate (ACH/H):	**0.124**

TYPE: 4002 THE VALLEYVIEW
LO# 77457



PART. BASEMENT
PLAN EL. 'A'
LOGGIA CONDITION
(EL. 'B' SIMILAR)



BASEMENT PLAN EL. 'A'

BASEMENT PLAN EL. 'B'

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 & TESTON
VAUGHAN, ONTARIO

THE VALLEYVIEW
4002 2968 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 61166 BTU/H

UNIT DATA

MAKE	LENNOX	
MODEL	EL296UH090XE48C	
INPUT	88	MBTU/H
OUTPUT	85	MBTU/H
COOLING	3.5	TONS
FAN SPEED	1255	cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	12	5	3
1ST FLOOR	8	2	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

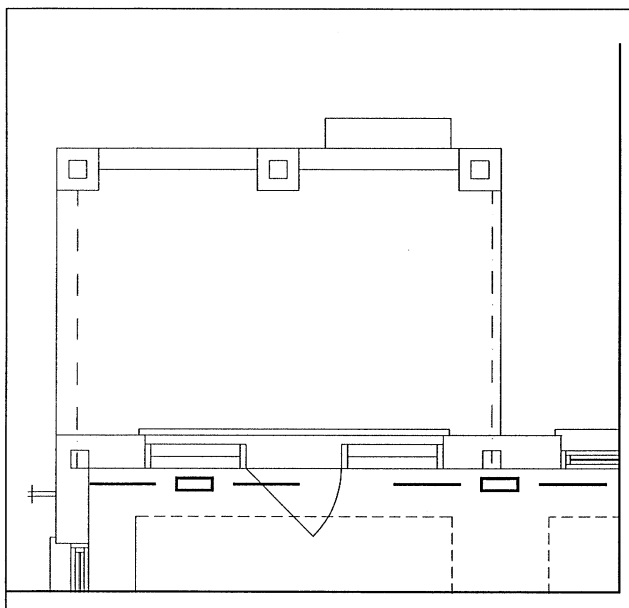
Sheet Title
BASEMENT HEATING LAYOUT

Date JAN/2018

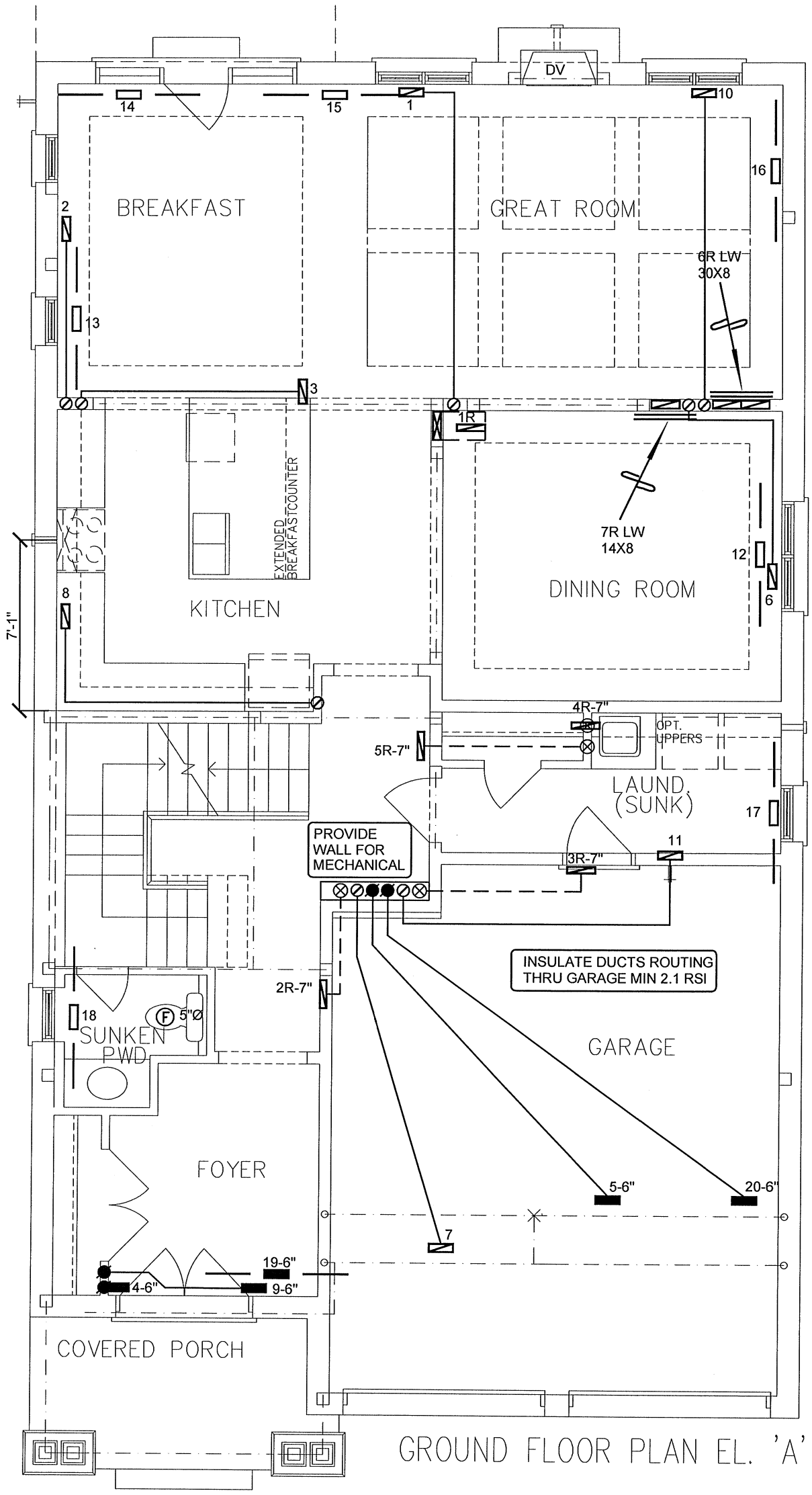
Scale 3/16" = 1'-0"

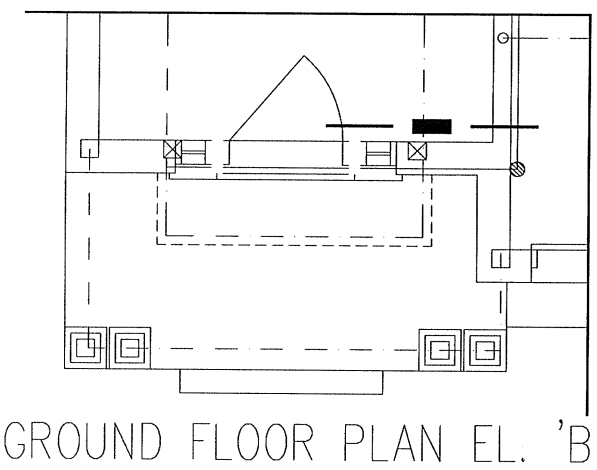
BCIN# 19669

LO# 77457



PART. GROUND FLOOR
PLAN EL. 'A'
LOGGIA CONDITION
(EL. 'B' SIMILAR)





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

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 VALLEYVIEW
4002 2968 sqft

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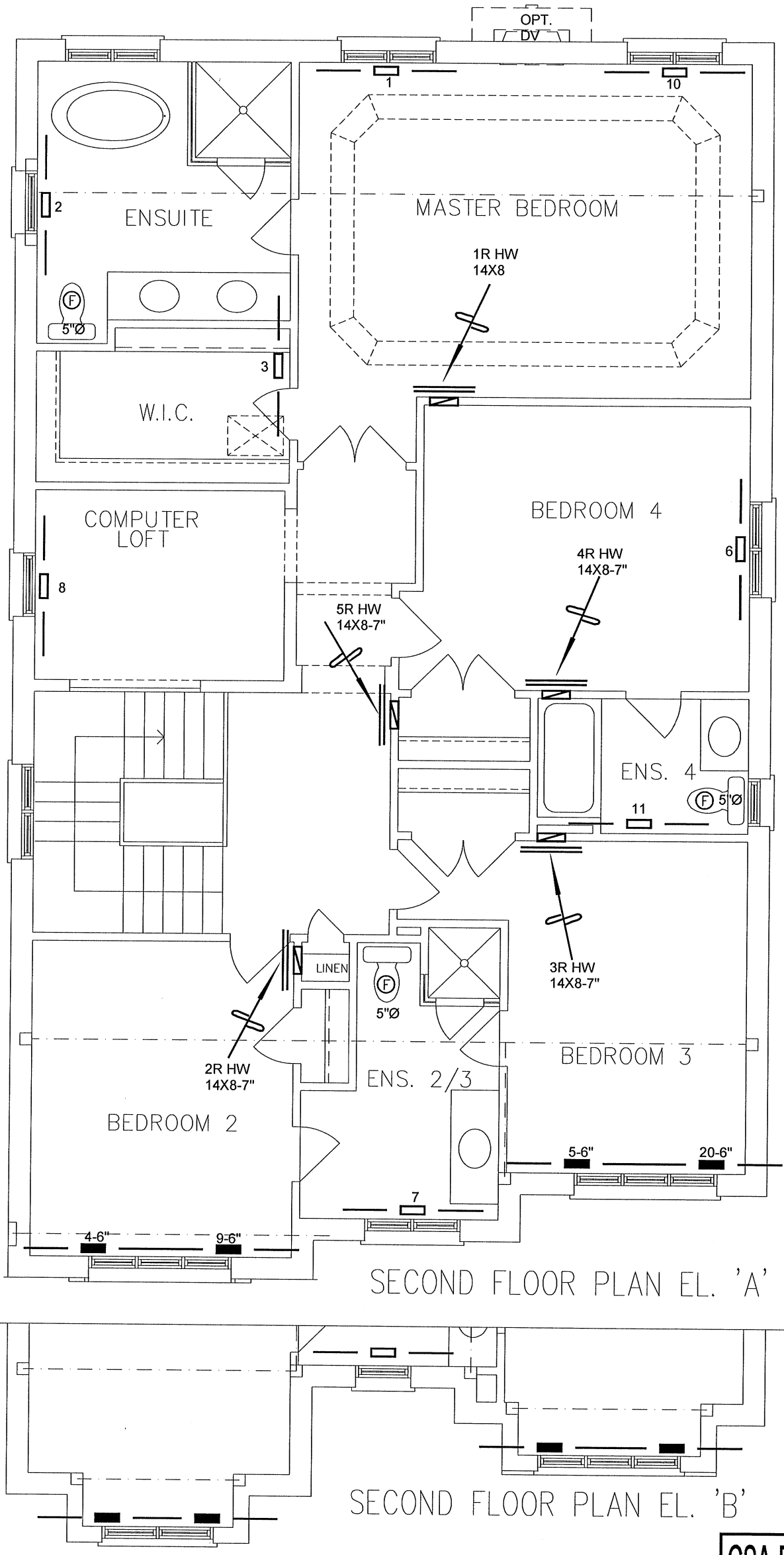
Sheet Title
FIRST FLOOR
HEATING
LAYOUT

Date JAN/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 77457



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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

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VAUGHAN, ONTARIO

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Sheet Title

SECOND FLOOR HEATING LAYOUT

Date JAN/2018

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 77457