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	**Postal code**	**Plan number/ other description**		

B. Individual who reviews and takes responsibility for design activities

Name		Firm		
MICHAEL O'ROURKE		**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: 42-3

Project: KLEINBURG GLEN

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 Division 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.

March 7, 2017
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.

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

SITE NAME: KLEINBURG GLEN — DATE: Mar-17 — WINTER NATURAL AIR CHANGE RATE 0.330 — HEAT LOSS ΔT °F. 76 — CSA-F280-12
BUILDER: GOLD PARK HOMES — TYPE: 42-3 — GFA: 3296 — LO# 72998 — SUMMER NATURAL AIR CHANGE RATE 0.121 — HEAT GAIN ΔT °F. 16 — SB-12 PACKAGE A1

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			BATH					ENS-2			MUD			
EXP. WALL			37			28			7			16			28			12			7					12			8			
CLG. HT.			10			9			9			9			9			9			9					9			11			
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	370			252			63			144			252			108			63					108			88			
GLAZING			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN				LOSS	GAIN		LOSS	GAIN		
NORTH	21.3	16.9	0	0	0	21	447	354	0	0	0	0	0	0	0	0	0	16	340	270	7	149	118			0	0	0	0	0	0	
EAST	21.3	42.4	32	681	1358	14	298	594	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0	
SOUTH	21.3	25.8	0	0	0	0	0	0	0	0	0	16	340	413	0	0	0	0	0	0	0	0	0			6	128	155	0	0	0	
WEST	21.3	42.4	0	0	0	0	0	0	0	0	0	0	0	0	46	979	1953	0	0	0	0	0	0			0	0	0	0	0	0	
SKYLT.	21.3	87.5	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	
DOORS	25.2	5.3	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	338	1508	318	217	968	204	63	281	59	128	571	120	206	919	194	92	411	86	56	250	53			102	455	96	68	303	64	
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.8	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	336	431	216	196	252	126	98	126	63	288	370	185	194	249	124	142	182	91	119	153	76			240	308	154	0	0	0	
NO ATTIC EXPOSED CLG	2.7	1.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44	121	60	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	194	495	104	0	0	0	100	255	54			0	0	0	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			2621			1965			407			1281			2642			1054			807					891			808			
SUB TOTAL HT GAIN					1891			1278			122			718			2375			508			301				405			170	
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		0.30	0.46		
AIR CHANGE HEAT LOSS			685			514			106			336			691			276			211					233			369			
AIR CHANGE HEAT GAIN					133			90			9			50			167			36			21				28			12	
DUCT LOSS			0			0			0			0			333			0			102					0			0			
DUCT GAIN					0			0			0			0			345			0			32				0			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					673			0			0			673			673			673			0				0			673	
TOTAL HT LOSS BTU/H			3306			2479			513			1616			3666			1330			1119					1124			1177			
TOTAL HT GAIN x 1.3 BTU/H					4131			1778			170			2186			4940			1894			460				563			1112	

ROOM USE			LIV/DIN				KT/GR			DEN			LAUN			W/R			FOY			WIC-2					BAS		
EXP. WALL			30				71			24			40			6			48			5					184		
CLG. HT.			10				10			10			9			10			10			9					9		
	FACTORS																													
GRS.WALL AREA	LOSS	GAIN	300				710			240			360			60			480			45					1104		
GLAZING			LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN				LOSS	GAIN	
NORTH	21.3	16.9	0	0	0		0	0	0	24	511	405	0	0	0	0	0	0	0	0	0	0	0	0			3	64	51
EAST	21.3	42.4	0	0	0		128	2724	5433	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3	64	127
SOUTH	21.3	25.8	40	851	1032		0	0	0	0	0	0	8	170	206	6	128	155	0	0	0	0	0	0			9	192	232
WEST	21.3	42.4	0	0	0		0	0	0	0	0	0	60	1277	2547	0	0	0	22	468	934	9	192	382			0	0	0
SKYLT.	21.3	87.5	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0
DOORS	25.2	5.3	0	0	0		8	202	43	0	0	0	0	0	0	0	0	0	22	555	117	0	0	0			20	505	106
NET EXPOSED WALL	4.5	0.9	260	1160	244		574	2562	539	216	964	203	292	1303	274	54	241	51	436	1946	410	36	161	34			0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.8	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			552	1986	418
EXPOSED CLG	1.3	0.6	0	0	0		0	0	0	0	0	0	232	298	149	0	0	0	0	0	0	40	51	26			0	0	0
NO ATTIC EXPOSED CLG	2.7	1.4	0	0	0		0	0	0	0	0	0	8	22	11	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	8	20	4	0	0	0	0	0	0	40	102	21			0	0	0
BASEMENT/CRAWL HEAT LOSS			0				0			0			0			0			0			0					6241		
SLAB ON GRADE HEAT LOSS			0				0			0			0			0			0			0							
SUBTOTAL HT LOSS			2012				5487			1475			3090			369			2969			506					9052		
SUB TOTAL HT GAIN					1276				6015			608			3192			206			1460			463					935	
LEVEL FACTOR / MULTIPLIER			0.30	0.46			0.30	0.46		0.30	0.46		0.20	0.26		0.30	0.46		0.30	0.46		0.20	0.26				0.50	1.10	
AIR CHANGE HEAT LOSS			918				2504			673			808			168			1355			132					9979		
AIR CHANGE HEAT GAIN					90				422			43			224			14			103			33					66	
DUCT LOSS			0				0			0			390			0			0			64					0		
DUCT GAIN					0				0			0			409			0			0			50					0	
HEAT GAIN PEOPLE	240		0		0		1		240	0		0	0		0	0		0	0		0	0		0			0		0	
HEAT GAIN APPLIANCES/LIGHTS					673				673			673			673			0			0			0					0	
TOTAL HT LOSS BTU/H			2929				7992			2148			4288			537			4324			701					19030		
TOTAL HT GAIN x 1.3 BTU/H					2651				9556			1721			5847			286			2032			709					1300	

TOTAL HEAT GAIN BTU/H: 41937 — TONS: 3.49 — LOSS DUE TO VENTILATION LOAD BTU/H: 2852 — STRUCTURAL HEAT LOSS: 58281 — TOTAL COMBINED HEAT LOSS BTU/H: 61133

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: KLEINBURG GLEN
BUILDER: GOLD PARK HOMES

TYPE: 42-3 DATE: Mar-17 GFA: 3296 LO# 72998

HEATING CFM	1255	COOLING CFM	1255	furnace pressure	0.6			^LENNOX	
TOTAL HEAT LOSS	58,281	TOTAL HEAT GAIN	41,336	furnace filter	0.05			EL296UH090XE48C	90
AIR FLOW RATE CFM	21.53	AIR FLOW RATE CFM	30.36	a/c coil pressure	0.2			FAN SPEED	
				available pressure for s/a & r/a	0.35			LOW	0
								MEDLOW	0
				plenum pressure s/a	0.18	r/a pressure	0.17	MEDIUM	1105
				max s/a dif press. loss	0.02	r/a grille press. Loss	0.02	MEDIUM HIGH	1255
				min adjusted pressure s/a	0.16	adjusted pressure r/a	0.15	HIGH	1525

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

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

TEMPERATURE RISE 63 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	14	8	5
R/A	0	0	4	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
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	ENS	BED-3	MBR	ENS-2	LIV/DIN
RM LOSS MBH.	1.65	1.24	0.51	1.62	1.83	1.33	1.12	1.24	1.83	1.65	1.12	2.93
CFM PER RUN HEAT	36	27	11	35	39	29	24	27	39	36	24	63
RM GAIN MBH.	2.07	0.89	0.17	2.19	2.47	1.89	0.46	0.89	2.47	2.07	0.56	2.65
CFM PER RUN COOLING	63	27	5	66	75	58	14	27	75	63	17	80
ADJUSTED PRESSURE	0.17	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.	53	68	45	37	40	55	34	56	36	48	38	15
EQUIVALENT LENGTH	120	120	130	130	140	140	100	160	130	150	120	100
TOTAL EFFECTIVE LENGTH	173	188	175	167	180	195	134	216	166	198	158	115
ADJUSTED PRESSURE	0.1	0.09	0.1	0.1	0.1	0.09	0.13	0.08	0.1	0.09	0.11	0.15
ROUND DUCT SIZE	5	4	4	5	5	5	4	4	5	5	4	5
HEATING VELOCITY (ft/min)	264	310	126	257	286	213	275	310	286	264	275	463
COOLING VELOCITY (ft/min)	463	310	57	485	551	426	161	310	551	463	195	587
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	C	A	B	G	G	B	G	A	G	D	D	D

RUN #	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	KT/GR	KT/GR	KT/GR	LAUN	W/R	FOY	WIC-2	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.66	2.66	2.66	2.14	0.54	4.32	0.70	3.81	3.81	3.81	3.81
CFM PER RUN HEAT	57	57	57	46	12	93	15	82	82	82	82
RM GAIN MBH.	3.19	3.19	3.19	2.92	0.29	2.03	0.71	0.26	0.26	0.26	0.26
CFM PER RUN COOLING	97	97	97	89	9	62	22	8	8	8	8
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.17	0.16	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	59	41	35	56	27	32	33	50	33	35	19
EQUIVALENT LENGTH	120	100	120	130	110	110	130	120	110	120	100
TOTAL EFFECTIVE LENGTH	179	141	155	186	137	142	163	170	143	155	119
ADJUSTED PRESSURE	0.09	0.11	0.1	0.09	0.13	0.11	0.11	0.1	0.11	0.1	0.14
ROUND DUCT SIZE	6	5	6	6	4	5	4	5	5	5	5
HEATING VELOCITY (ft/min)	291	419	291	235	138	683	172	602	602	602	602
COOLING VELOCITY (ft/min)	495	712	495	454	103	455	252	59	59	59	59
OUTLET GRILL SIZE	4X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	C	C	F	G	F	G	A	C	B	G

RUN #	25	26	27	28
ROOM NAME	BAS	DEN	MUD	LAUN
RM LOSS MBH.	3.81	2.15	1.18	2.14
CFM PER RUN HEAT	82	46	25	46
RM GAIN MBH.	0.26	1.72	1.11	2.92
CFM PER RUN COOLING	8	52	34	89
ADJUSTED PRESSURE	0.16	0.17	0.17	0.16
ACTUAL DUCT LGH.	31	35	26	51
EQUIVALENT LENGTH	110	110	120	130
TOTAL EFFECTIVE LENGTH	141	145	146	181
ADJUSTED PRESSURE	0.11	0.12	0.12	0.09
ROUND DUCT SIZE	5	4	4	6
HEATING VELOCITY (ft/min)	602	528	287	235
COOLING VELOCITY (ft/min)	59	597	390	454
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10
TRUNK	F	B	B	F

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	193	0.08	7.6	8	x	8	434	TRUNK G	513	0.09	10.6	14	x	8	660
TRUNK B	386	0.08	9.8	12	x	8	579	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	618	0.08	11.7	16	x	8	695	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	123	0.09	6.2	4	x	8	554	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	741	0.08	12.5	18	x	8	741	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	267	0.09	8.3	8	x	8	601	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	875	0.05	15	26	x	8	606
TRUNK Y	425	0.05	11.5	16	x	8	478
TRUNK Z	270	0.05	9.7	12	x	8	405
DROP	1255	0.05	17.2	24	x	11	685

RETURN AIR #	1	2	3	4	5	6										BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	155	135	130	120	135	380	0	0	0	0	0	0	0	0	0	200
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	69	40	45	51	16	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	185	235	185	165	240	215	0	0	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	236	304	225	210	291	231	1	1	1	1	1	1	1	1	1	159
ADJUSTED PRESSURE	0.06	0.05	0.07	0.07	0.05	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	7.5	7.5	6.8	6.6	7.5	10.5	0	0	0	0	0	0	0	0	0	7.5
INLET GRILL SIZE	8	8	8	8	8	8	0	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	0	0	0	0	0	0	0	0	0	14

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.

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: 42-3 LO # 72998
SITE NAME: KLEINBURG GLEN

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
More than 5 - Part 6	**TOTAL**	79.5	cfm

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	190.8	cfm
Less Principal Ventil. Capacity	139	cfm
Required Supplemental Capacity	51.8	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 60H-V+ Location: BSMT

139.0 cfm 3.0 sones [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
139.0 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
W/R	QTXEN050C	50	✓	0.3

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE 60H-V+

139 cfm high 50 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: March-17

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

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 42-3 **BUILDER:** GOLD PARK HOMES
SFQT: 3296 **LO#** 72998 **SITE:** KLEINBURG GLEN

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:	WEST	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):	44494.0	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:	6.0 ft
LENGTH: 58.0 ft	WIDTH: 34.0 ft	EXPOSED PERIMETER:	184.0 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	29.8
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.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 72998 Model: 42-3 Builder: GOLD PARK HOMES Date: 2017-03-07

Volume Calculation

House Volume			
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1483	9	13347
First	1483	10	14830
Second	1813	9	16317
Third	0	9	0
Fourth	0	9	0
		Total:	44,494.0 ft³
		Total:	1259.9 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.330
SUMMER NATURAL AIR CHANGE RATE	0.121

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

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

0.330 x 349.98 x 42 °C x 1.2 = 5849 W

= **19957 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.121 x 349.98 x 9 °C x 1.2 = 451 W

= **1539 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

139 CFM x 76 °F x 1.08 x 0.25 = **2852 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

139 CFM x 16 °F x 1.08 x 0.25 = **600 Btu/h**

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

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

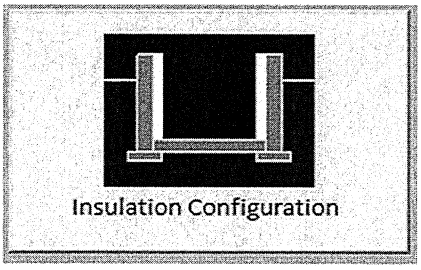
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL_{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)
1	0.5	19,957	9,052	1.102
2	0.3		13,120	0.456
3	0.2		15,263	0.262
4	0		0	0.000
5	0		0	0.000

*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
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 dand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	**17.7**	 Insulation Configuration
Floor Width (m):	**10.4**	
Exposed Perimeter (m):	**0.0**	
Wall Height (m):	**2.7**	
Depth Below Grade (m):	**1.8**	
Window Area (m^2):	**1.4**	
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):	**1829**	

TYPE: 42-3
LO# 72998

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

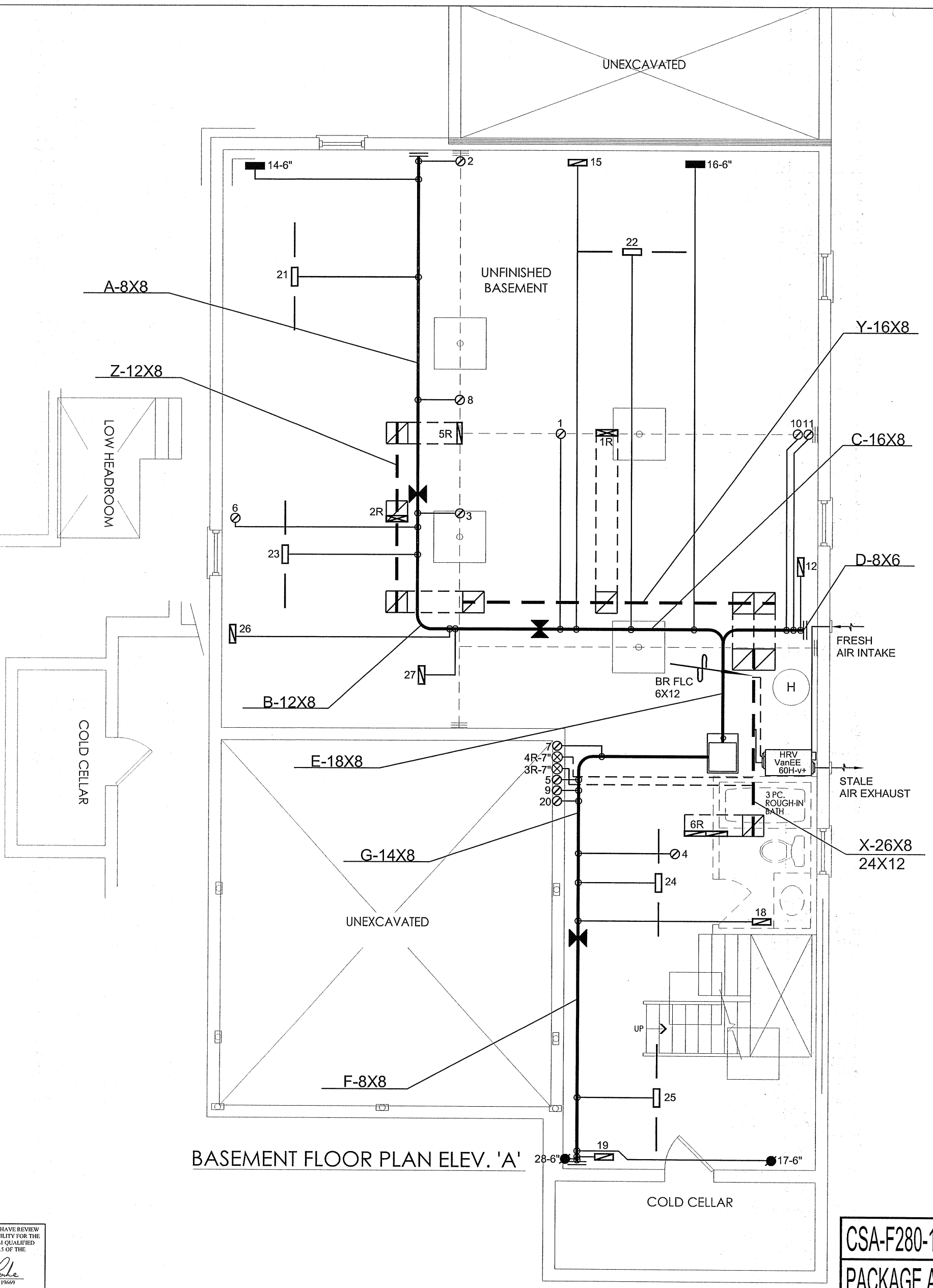
Air Infiltration Residential Load Calculator

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):	6.71		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m^3):	1259.9		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.		1679.5 cm^2
	3.57		ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply		Total Exhaust
	65.6		65.6
Flue Size			
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	**0.330**		
Cooling Air Leakage Rate (ACH/H):	**0.121**		

TYPE: 42-3
LO# 72998

PART. BASEMENT FLOOR PLAN ELEV. 'B'



BASEMENT FLOOR PLAN ELEV. 'A'

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
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	FLOOR 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
KLEINBURG GLEN
VAUGHAN, ONTARIO

42-3 3296 sqft

HVAC DESIGNS LTD.
375 Finley Ave - Unit 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
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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 61133 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	EL296UH090XE48C
INPUT	88 MBTU/H
OUTPUT	85 MBTU/H
COOLING	3.5 TONS
FAN SPEED	1255 cfm @ 0.5" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	14	4	4
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

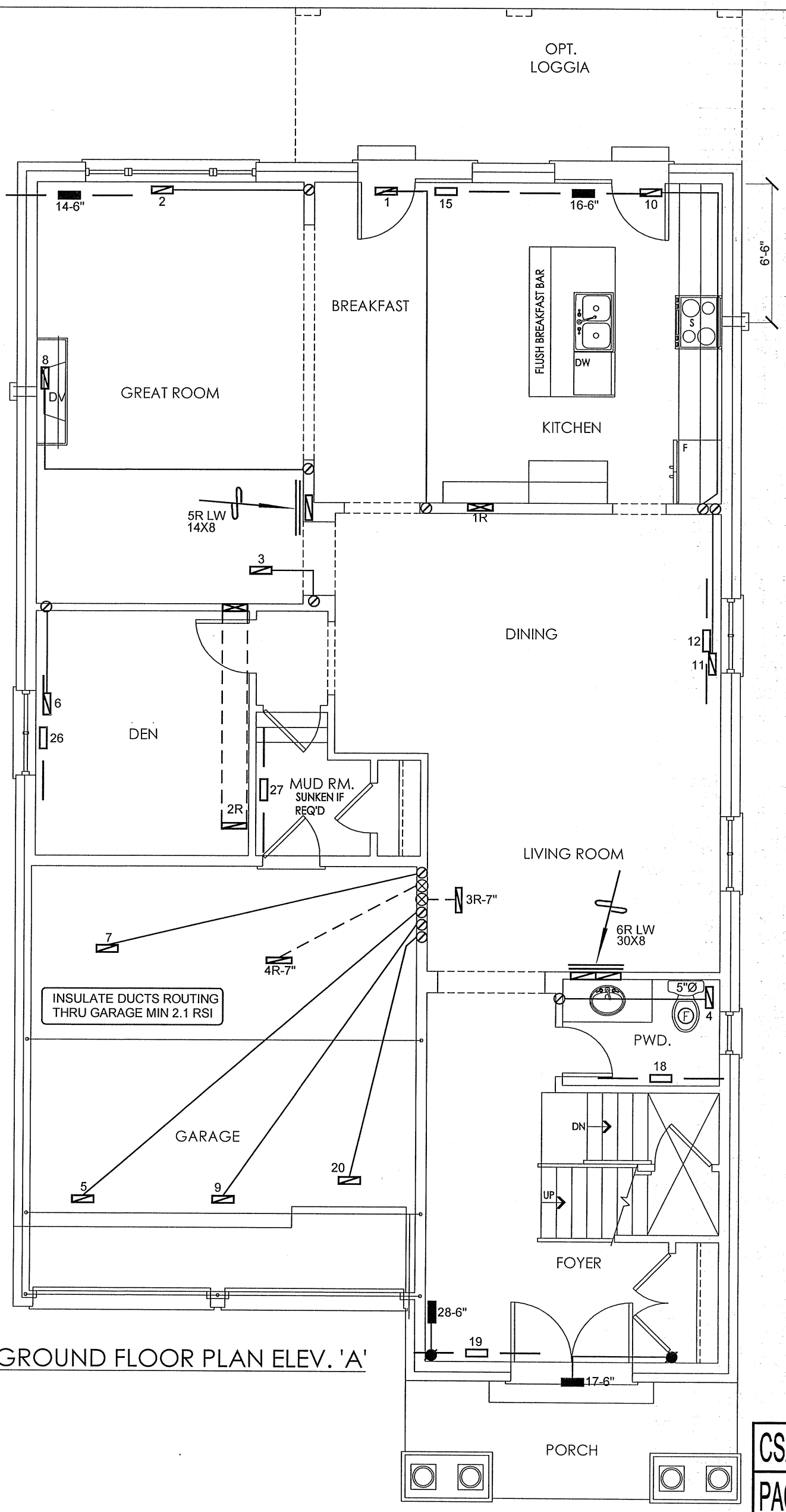
Sheet Title
BASEMENT HEATING LAYOUT

Date MAR/2017

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 72998



GROUND FLOOR PLAN ELEV. 'A'

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HVAC DESIGNS LTD.

CSA-F280-12

PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
— ▭ —	FLOOR SUPPLY AIR GRILLE	▬	6" SUPPLY AIR BOOT ABOVE	▭	14"x8" RETURN AIR GRILLE	▭	RETURN AIR STACK ABOVE
— ▬ —	FLOOR 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
KLEINBURG GLEN
VAUGHAN, ONTARIO

42-3 3296 sqft

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375 Finley Ave - Unit 202 - Ajax, Ontario
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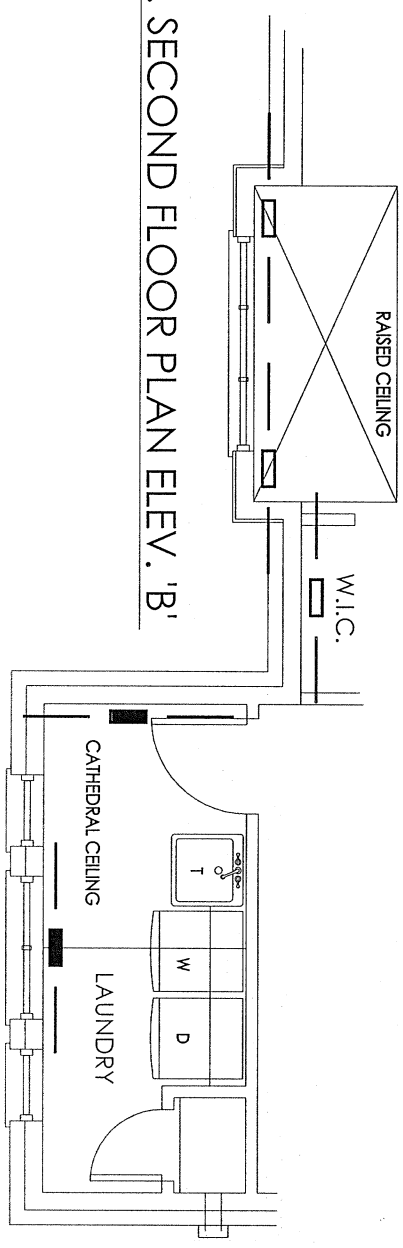
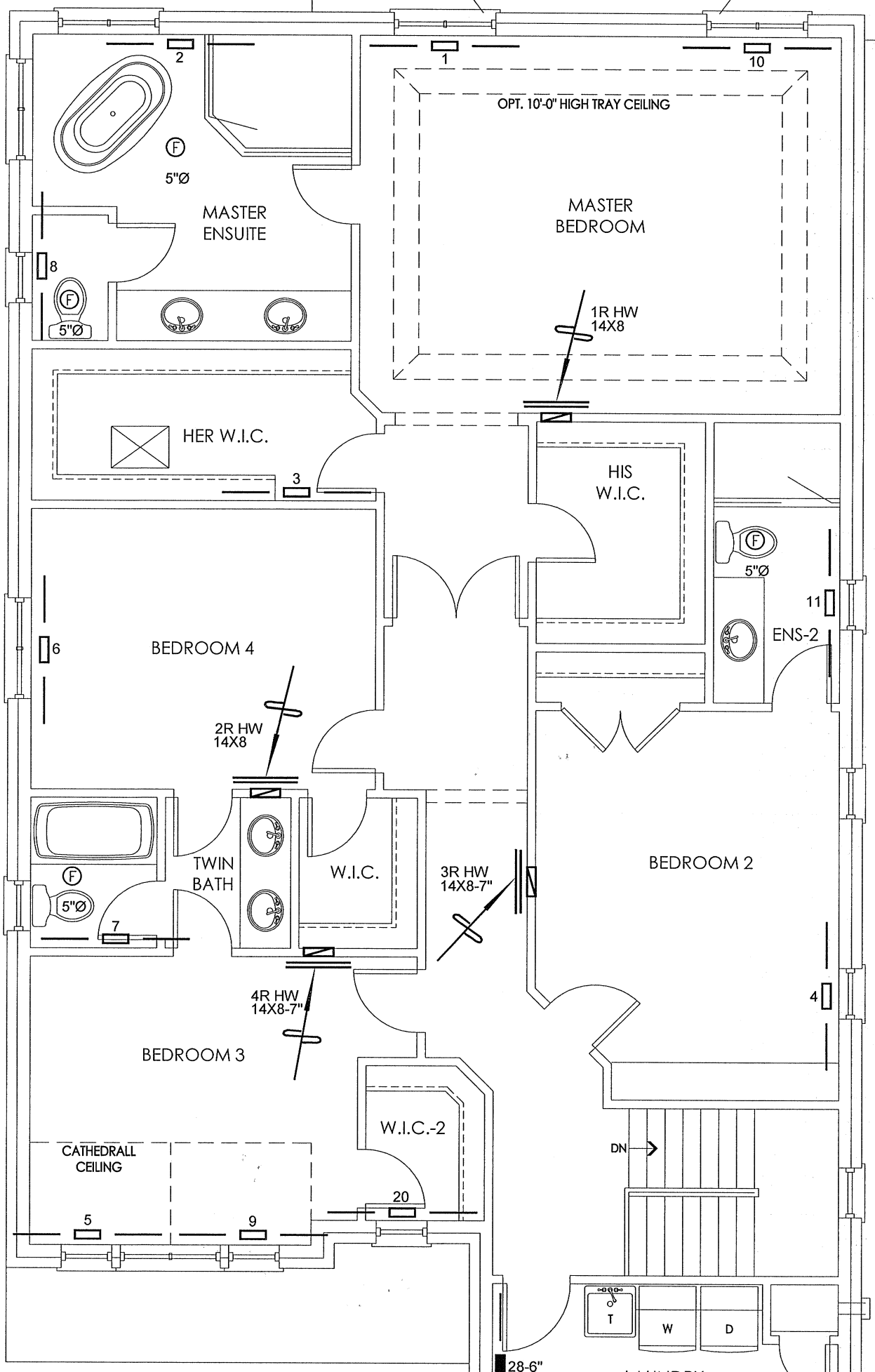
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date MAR/2017
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 72998





SECOND FLOOR PLAN ELEV. 'A'

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

Michael O'Rourke

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

CSA-F280-12

PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	FLOOR 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.		
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1.		

REVISIONS

Client

GOLD PARK HOMES

Project Name

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42-3 3296 sqft

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Sheet Title

SECOND FLOOR HEATING LAYOUT

Date MAR/2017

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 72998