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:** 5005 - THE HIGHBOURNE **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 24, 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.

HVA DESIGNS LTD.

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

SITE NAME: PINE VALLEY & TESTON | DATE: Jan-18 | WINTER NATURAL AIR CHANGE RATE 0.350 | HEAT LOSS ΔT °F. 76 | CSA-F280-12

BUILDER: GOLD PARK HOMES | TYPE: 5005 - THE HIGHBOURNE | GFA: 4472 | LO# 77480 | SUMMER NATURAL AIR CHANGE RATE 0.121 | HEAT GAIN ΔT °F. 14 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			ENS-2			WIC-2			ENS-3			ENS-4		
EXP. WALL			46			36			13			32			50			19			6			9			4			7		
CLG. HT.			11			10			10			11			11			10			10			10			10			10		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	506			360			130			352			550			190			60			90			40			70		
GLAZING			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN	
NORTH	21.3	16.3	0	0	0	0	0	0	6	128	98	18	383	293	0	0	0	0	0	0	8	170	130	0	0	0	0	0	0	0	0	0
EAST	21.3	41.8	0	0	0	0	0	0	0	0	0	70	1490	2928	73	1553	3054	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	21.3	25.2	0	0	0	0	0	0	0	0	0	0	0	0	28	596	705	32	681	806	0	0	0	0	0	0	0	0	0	8	170	201
WEST	21.3	41.8	50	1064	2092	34	724	1422	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	37.2	102.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	25.2	4.6	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
NET EXPOSED WALL	4.5	0.8	456	2035	370	326	1455	264	124	553	100	264	1178	214	449	2004	364	158	705	128	52	232	42	90	402	73	40	179	32	62	277	50
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	533	684	322	323	415	195	247	317	149	254	326	154	272	349	164	285	366	172	60	77	36	48	62	29	140	180	85	105	135	63
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0	0	24	66	31	84	231	109	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.5	0	0	0	0	0	0	154	393	71	278	709	129	104	265	48	0	0	0	60	153	28	48	122	22	24	61	11	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				3783			2593			1391			4152			4998			1752			632			586			419			582	
SUB TOTAL HT GAIN					2783			1882			419			3748			4444			1106			236			124			128			315
LEVEL FACTOR / MULTIPLIER			0.20	0.30		0.20	0.30		0.20	0.30		0.20	0.30		0.20	0.30		0.20	0.30		0.20	0.30		0.20	0.30		0.20	0.30		0.20	0.30	
AIR CHANGE HEAT LOSS				1142			783			420			1253			1508			529			191			177			127			176	
AIR CHANGE HEAT GAIN					222			150			33			299			354			88			19			10			10			25
DUCT LOSS				0			0			181			540			651			0			82			76			55			0	
DUCT GAIN					0			0			114			498			573			0			26			13			14			0
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					688			0			688			688			688			688			0			0			0			0
TOTAL HT LOSS BTU/H				4925			3375			1992			5945			7157			2281			905			839			601			757	
TOTAL HT GAIN x 1.3 BTU/H					5426			2641			1631			7115			8189			2759			365			192			198			442

ROOM USE			LIB			DIN			KIT/GT			CAB			LAUN			PWD			FOY			MUD						BAS		
EXP. WALL			31			32			87			45			0			5			35			18						238		
CLG. HT.			11			11			11			11			10			11			11			12						10		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	341			352			957			495			0			55			385			216						1666		
GLAZING			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN					LOSS	GAIN	
NORTH	21.3	16.3	0	0	0	0	0	0	46	979	748	0	0	0	0	0	0	9	192	146	0	0	0	0	0	0				20	426	325
EAST	21.3	41.8	56	1192	2343	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0
SOUTH	21.3	25.2	0	0	0	34	724	856	20	426	504	63	1341	1586	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0
WEST	21.3	41.8	0	0	0	0	0	0	115	2447	4811	63	1341	2635	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0
SKYLT.	37.2	102.0	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	4.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62	1565	284	20	505	92				20	505	92
NET EXPOSED WALL	4.5	0.8	285	1272	231	318	1419	258	776	3463	629	369	1647	299	0	0	0	46	205	37	323	1441	262	196	875	159				0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				714	2569	467
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	102	131	62	0	0	0	0	0	0	0	0	0				0	0	0
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0	0	203	558	263	0	0	0	40	110	52	41	113	53	0	0	0				0	0	0
EXPOSED FLOOR	2.6	0.5	0	0	0	0	0	0	0	0	0	0	0	0	56	143	26	0	0	0	0	0	0	0	0	0				0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0			0					8437		
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			0							
SUBTOTAL HT LOSS				2464			2143			7315			4886			274			507			3120			1380					11937		
SUB TOTAL HT GAIN					2574			1114			6691			4784			88			235			599			251						883
LEVEL FACTOR / MULTIPLIER			0.30	0.44		0.30	0.44		0.30	0.44		0.30	0.44		0.20	0.30		0.30	0.44		0.30	0.44		0.30	0.44					0.50	1.34	
AIR CHANGE HEAT LOSS				1082			941			3213			2146			83			223			1370			606					15966		
AIR CHANGE HEAT GAIN					205			89			533			381			7			19			48			20						70
DUCT LOSS				0			0			0			0			36			0			0			0					0		
DUCT GAIN					0			0			0			0			78			0			0			0						0
HEAT GAIN PEOPLE	240		0		0	0		0	0		0	0		0	0		0	0		0	0		0	0		0				0		0
HEAT GAIN APPLIANCES/LIGHTS					688			688			688			688			688			0			0			688						688
TOTAL HT LOSS BTU/H				3546			3084			10527			7032			392			729			4490			1986					27903		
TOTAL HT GAIN x 1.3 BTU/H					4507			2458			10286			7609			1120			330			841			1247						2135

TOTAL HEAT GAIN BTU/H: 60068 | TONS: 5.01 | LOSS DUE TO VENTILATION LOAD BTU/H: 3181 | STRUCTURAL HEAT LOSS: 88465 | TOTAL COMBINED HEAT LOSS BTU/H: 91645

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 & TESTON
BUILDER: GOLD PARK HOMES

TYPE: 5005 - THE HIGHBOURNE DATE: Jan-18 GFA: 4472 LO# 77480

HEATING CFM	1955	COOLING CFM	1955
TOTAL HEAT LOSS	88,465	TOTAL HEAT GAIN	59,490
AIR FLOW RATE CFM	22.1	AIR FLOW RATE CFM	32.86

furnace pressure	0.6
furnace filter	0.08
a/c coil pressure	0.2
available pressure for s/a & r/a	0.32
plenum pressure s/a	0.17
max s/a dif press. loss	0.02
min adjusted pressure s/a	0.15
r/a pressure	0.15
r/a grille press. Loss	0.02
adjusted pressure r/a	0.13

^LENNOX
EL296UH110XE60C 110
FAN SPEED
LOW 0
MEDLOW 1380
MEDIUM 1505
MEDIUM HIGH 1685
HIGH 1955

AFUE = 96 %
INPUT (BTU/H) = 110,000
OUTPUT (BTU/H) = 106,000
DESIGN CFM = 1955
CFM @ .6 " E.S.P.
TEMPERATURE RISE 50 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	18	13	7
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	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	WIC-2	ENS-3	MBR	ENS-4	LIB	DIN	KIT/GT	KIT/GT	KIT/GT	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.46	2.73	1.99	1.98	2.39	2.28	0.91	0.84	0.60	2.46	0.76	1.77	3.08	2.63	2.63	2.63	0.39	0.73	4.49	1.99	3.99	3.99	3.99	3.99
CFM PER RUN HEAT	54	60	44	44	53	50	20	19	13	54	17	39	68	58	58	58	9	16	99	44	88	88	88	88
RM GAIN MBH.	2.71	2.28	1.63	2.37	2.73	2.76	0.36	0.19	0.20	2.71	0.44	2.25	2.46	2.57	2.57	2.57	1.12	0.33	0.84	1.25	0.30	0.30	0.30	0.30
CFM PER RUN COOLING	89	75	54	78	90	91	12	6	7	89	15	74	81	85	85	85	37	11	28	41	10	10	10	10
ADJUSTED PRESSURE	0.15	0.16	0.16	0.16	0.15	0.15	0.16	0.16	0.16	0.15	0.16	0.16	0.15	0.15	0.15	0.15	0.16	0.16	0.15	0.16	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	70	70	53	49	75	48	47	48	53	64	59	57	29	52	69	54	36	73	40	47	67	60	54	38
EQUIVALENT LENGTH	200	200	170	160	170	160	200	150	170	170	150	140	103	120	140	110	200	170	210	160	150	120	103	90
TOTAL EFFECTIVE LENGTH	270	270	223	209	245	208	247	198	223	234	209	197	132	172	209	164	236	243	250	207	217	180	157	128
ADJUSTED PRESSURE	0.05	0.06	0.07	0.07	0.06	0.07	0.06	0.08	0.07	0.06	0.07	0.08	0.11	0.09	0.07	0.09	0.07	0.06	0.06	0.08	0.07	0.08	0.09	0.11
ROUND DUCT SIZE	**6**	**6**	5	**6**	**6**	**6**	4	4	4	**6**	4	5	5	5	**6**	5	4	4	**6**	4	**6**	**6**	5	5
HEATING VELOCITY (ft/min)	275	306	323	224	270	255	229	218	149	275	195	286	499	426	296	426	103	184	505	505	449	449	646	646
COOLING VELOCITY (ft/min)	454	382	396	398	459	464	138	69	80	454	172	543	595	624	433	624	424	126	143	470	51	51	73	73
OUTLET GRILL SIZE	4X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	3X10	3X10
TRUNK	D	C	E	G	F	E	E	G	G	D	E	F	E	D	B	C	G	A	F	C	A	B	D	E

RUN #	25	26	27	28	29	30	31	32	33	34	35	36	37	38
ROOM NAME	BAS	BAS	BED-2	BED-2	BED-3	BED-3	LIB	KIT/GT	CAB	CAB	CAB	ENS	ENS	BAS
RM LOSS MBH.	3.99	3.99	1.98	1.98	2.39	2.39	1.77	2.63	2.34	2.34	2.34	0.33	0.33	3.99
CFM PER RUN HEAT	88	88	44	44	53	53	39	58	52	52	52	7	7	88
RM GAIN MBH.	0.30	0.30	2.37	2.37	2.73	2.73	2.25	2.57	2.54	2.54	2.54	0.18	0.18	0.30
CFM PER RUN COOLING	10	10	78	78	90	90	74	85	83	83	83	6	6	10
ADJUSTED PRESSURE	0.15	0.15	0.16	0.16	0.15	0.15	0.16	0.15	0.15	0.15	0.15	0.16	0.16	0.15
ACTUAL DUCT LGH.	34	50	52	55	80	63	51	55	69	71	82	56	58	23
EQUIVALENT LENGTH	110	150	170	160	170	200	160	120	150	130	140	200	190	140
TOTAL EFFECTIVE LENGTH	144	200	222	215	250	263	211	175	219	201	222	256	248	163
ADJUSTED PRESSURE	0.1	0.07	0.07	0.07	0.06	0.06	0.07	0.08	0.07	0.07	0.07	0.06	0.06	0.09
ROUND DUCT SIZE	5	**6**	**6**	**6**	**6**	**6**	5	**6**	**6**	**6**	**6**	4	4	5
HEATING VELOCITY (ft/min)	646	449	224	224	270	270	286	296	265	265	265	80	80	646
COOLING VELOCITY (ft/min)	73	51	398	398	459	459	543	433	423	423	423	69	69	73
OUTLET GRILL SIZE	3X10	4X10	4X10	4X10	4X10	4X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10
TRUNK	G	F	G	G	F	F	F	B	A	A	A	C	C	E

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	260	0.06	9.1	10	x	8	468	TRUNK G	685	0.06	13.1	20	x	8	617
TRUNK B	204	0.07	8	8	x	8	459	TRUNK H	1954	0.05	20.3	38	x	10	740
TRUNK C	640	0.06	12.8	20	x	8	576	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	254	0.05	9.4	10	x	8	457	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	1269	0.05	17.2	28	x	10	653	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	424	0.06	10.9	14	x	8	545	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	1630	0.05	18.9	32	x	10	734
TRUNK Y	955	0.05	15.5	28	x	8	614
TRUNK Z	480	0.05	12	16	x	8	540
DROP	1955	0.05	20.3	24	x	18	652

RETURN AIR #	1	2	3	4	5	6	7	8								BR
	0	0	0	0	2@7"	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	115	130	125	115	240	200	360	365	0	0	0	0	0	0	0	305
PLENUM PRESSURE	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
ACTUAL DUCT LGH.	84	51	62	59	47	49	30	51	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	200	135	155	185	135	140	170	195	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	284	186	217	244	182	189	200	246	1	1	1	1	1	1	1	159
ADJUSTED PRESSURE	0.05	0.07	0.06	0.05	0.07	0.07	0.07	0.05	13.36	13.36	13.36	13.36	13.36	13.36	13.36	0.08
ROUND DUCT SIZE	7	6.8	6.9	7	8.5	7.9	9.9	10.8	0	0	0	0	0	0	0	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	30	30	0	0	0	0	0	0	0	30

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

HVAC DESIGNS LTD.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
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TYPE: 5005 - THE HIGHBOURNE LO # 77480
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	7	@ 10.6 cfm	74.2	cfm
Other Rooms	8	@ 10.6 cfm	84.8	cfm
Table 9.32.3.A.		TOTAL	233.2	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	233.2	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	78.2	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	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.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 77480 Model: 5005 - THE HIGHBOURNE Builder: GOLD PARK HOMES Date: 24/01/2018

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	2033	10	20330
First	2033	11	22363
Second	2439	10	24390
Third	0	9	0
Fourth	0	9	0
		Total:	67,083.0 ft³
		Total:	1899.6 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.350
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	23	31	8	14

5.2.3.1 Heat Loss due to Air Leakage

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

0.350 x 527.66 x 42 °C x 1.2 = 9359 W

= **31933 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.121 x 527.66 x 8 °C x 1.2 = 588 W

= **2005 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 14 °F x 1.08 x 0.25 = **578 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	31,933	11,937	1.338
2	0.3		21,813	0.439
3	0.2		21,161	0.302
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: 5005 - THE HIGHBOURNE **BUILDER:** GOLD PARK HOMES
SFQT: 4472 **LO#** 77480 **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)	74

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):	67083.0	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: 77.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	238.0 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

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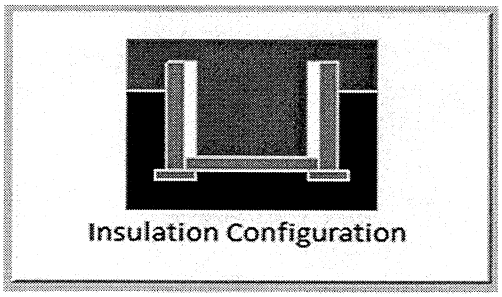
905-619-2300

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):	**23.5**	 Insulation Configuration
Floor Width (m):	**12.8**	
Exposed Perimeter (m):	**0.0**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**2.13**	
Window Area (m^2):	**1.9**	
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):		**2472**

TYPE: 5005 - THE HIGHBOURNE
LO# 77480

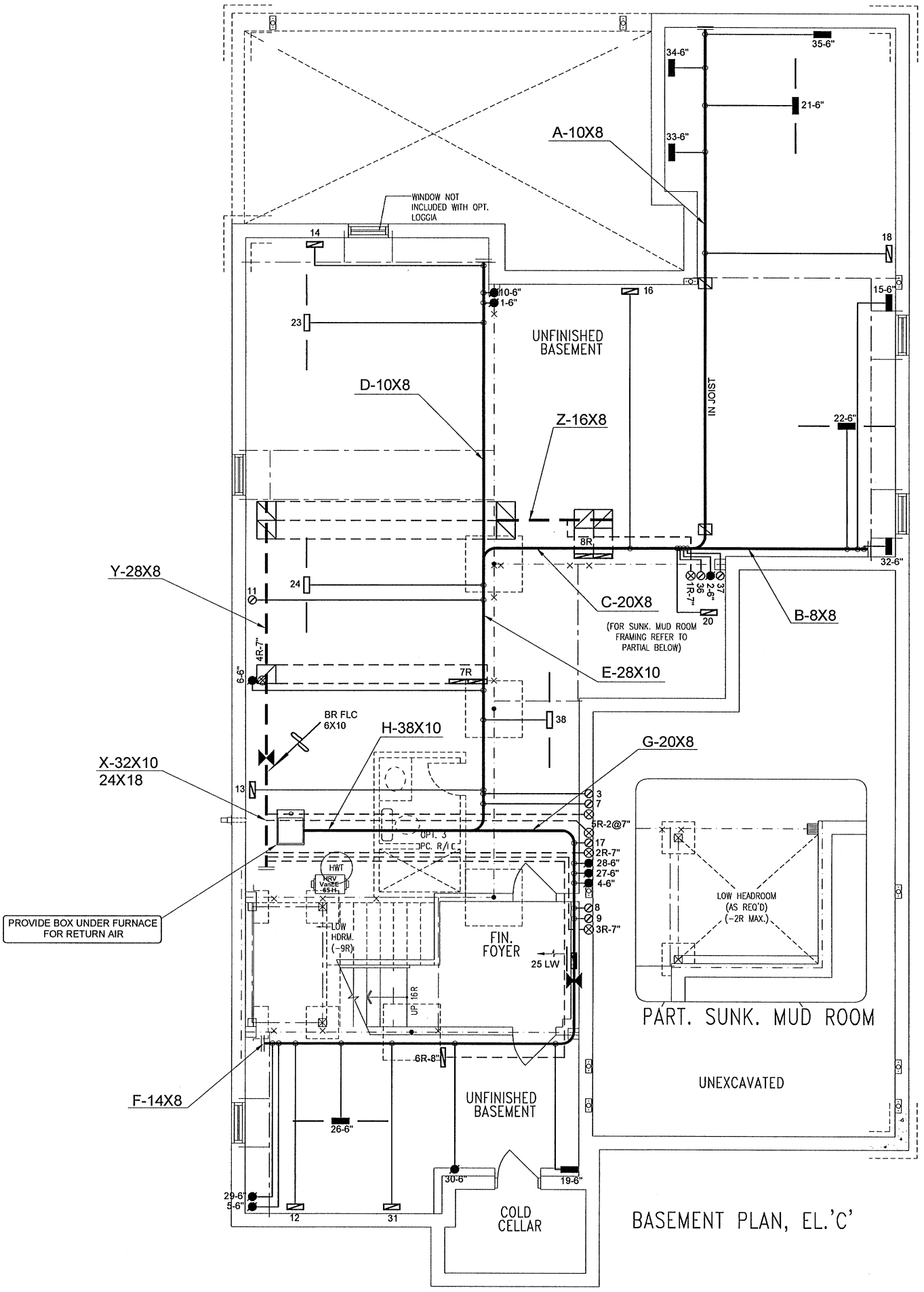
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

Air Infiltration Residential Load Calculator

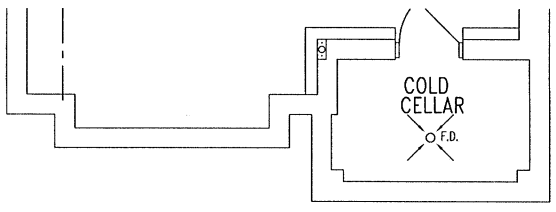
Supplemental tool for CAN/CSA-F280

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):	7.32				
Building Configuration					
Type:	Detached				
Number of Stories:	Two				
Foundation:	Full				
House Volume (m^3):	1899.6				
Air Leakage/Ventilation					
Air Tightness Type:	Present (1961-) (3.57 ACH)				
Custom BDT Data:	ELA @ 10 Pa.				2532.2 cm^2
	3.57				ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply			Total Exhaust	
	73.2			73.2	
Flue Size					
Flue #:	#1	#2	#3	#4	
Diameter (mm):	0	0	0	0	
Natural Infiltration Rates					
Heating Air Leakage Rate (ACH/H):	**0.350**				
Cooling Air Leakage Rate (ACH/H):	**0.121**				

TYPE: 5005 - THE HIGHBOURNE
LO# 77480



BASEMENT PLAN, EL.'C'



BASEMENT PLAN, EL.'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

GOLDPARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO

THE HIGHBOURNE
5005 4472 sqft

HVAC DESIGNS LTD.
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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.

HEAT LOSS 91645 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	EL296UH110XE60C
INPUT	110 MBTU/H
OUTPUT	106 MBTU/H
COOLING	5.0 TONS
FAN SPEED	1955 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	18	5	7
1ST FLOOR	13	3	3
BASEMENT	7	1	0

ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

Sheet Title

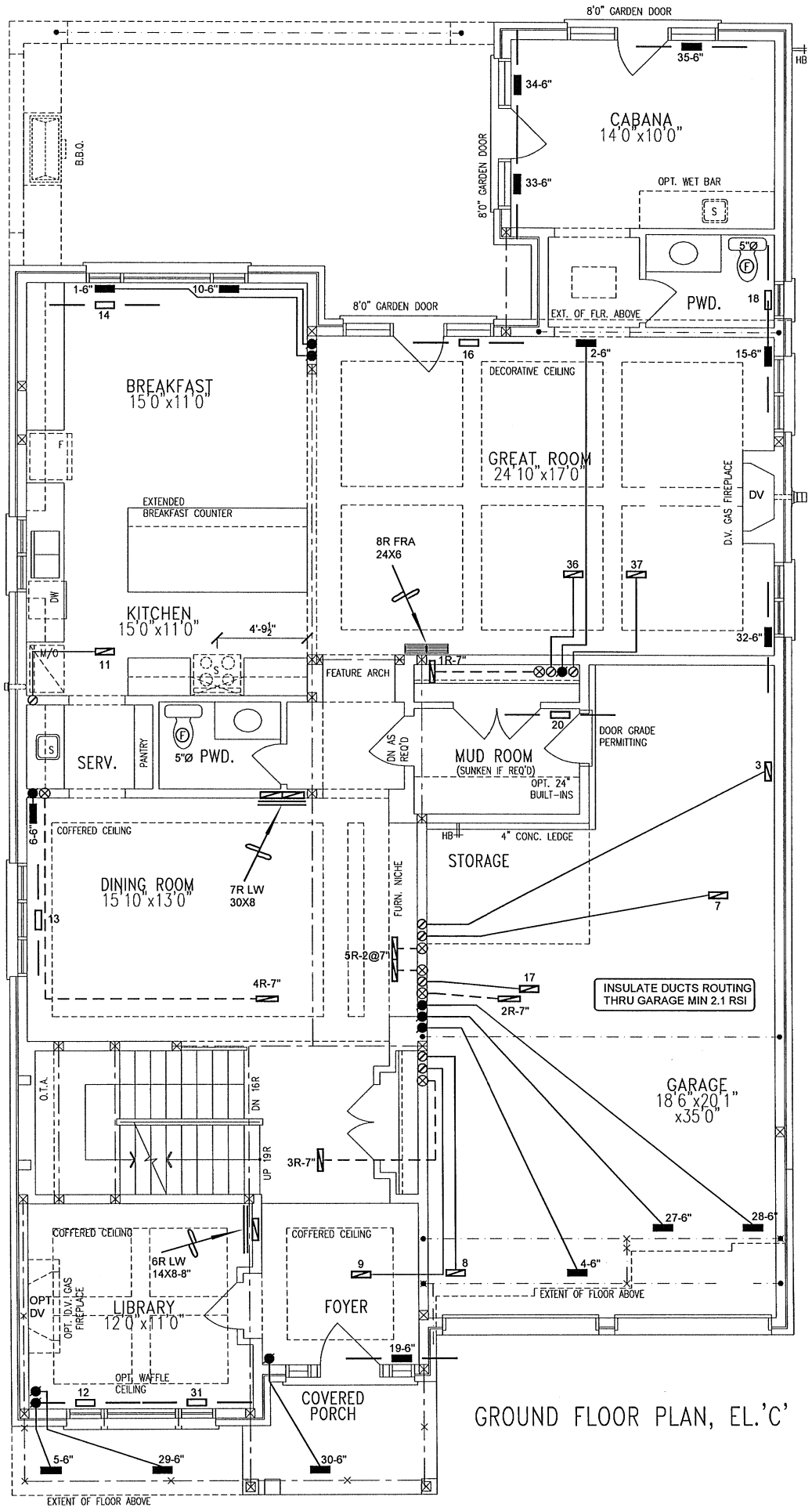
BASEMENT HEATING LAYOUT

Date JAN/2018

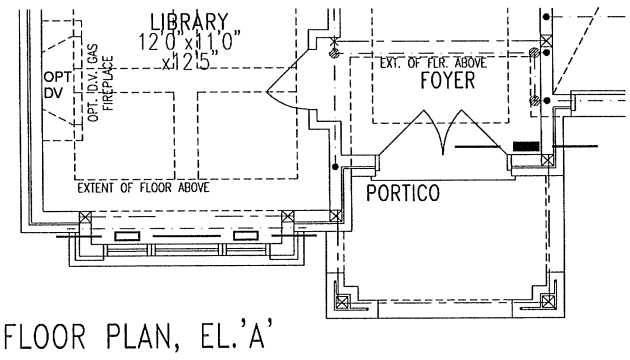
Scale 1/8" = 1'-0"

BCIN# 19669

LO# 77480



GROUND FLOOR PLAN, EL.'C'



GROUND FLOOR PLAN, EL.'A'

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HVAC DESIGNS LTD.

CSA-F280-12

PACKAGE A1

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Client
GOLDPARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO

THE HIGHBOURNE
5005 4472 sqft

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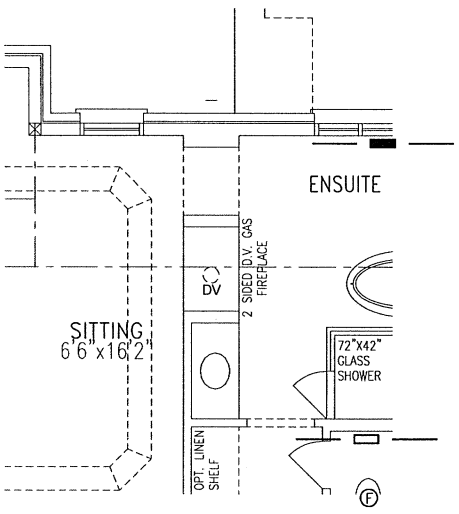
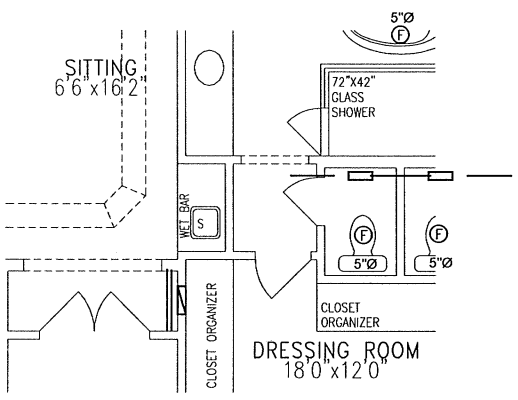
Sheet Title
FIRST FLOOR HEATING LAYOUT

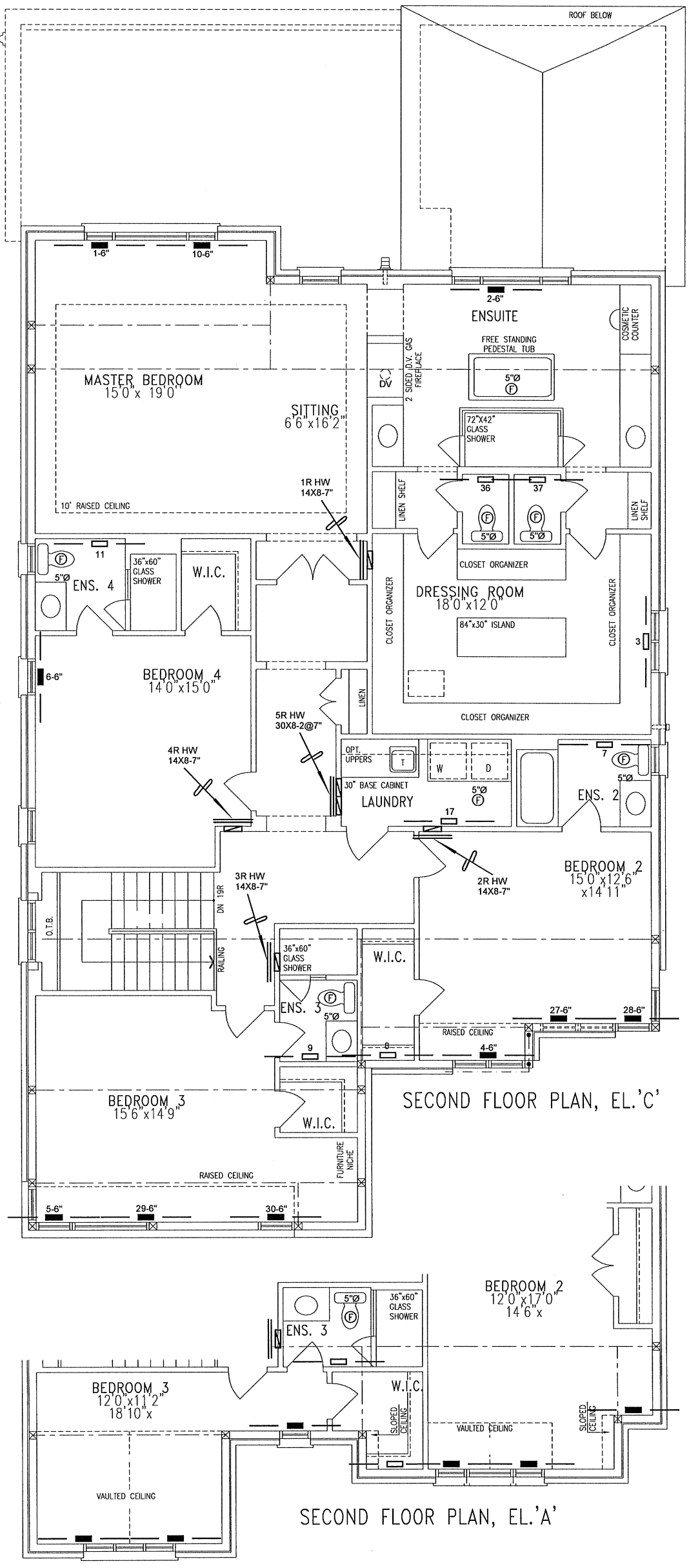
Date JAN/2018
Scale 1/8" = 1'-0"
BCIN# 19669
LO# 77480



PART. SECOND FLOOR PLAN
OPT. SITTING AREA FIREPLACE



PART. SECOND FLOOR PLAN
OPT. SITTING AREA WET BAR



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CSA-F280-12

PACKAGE A1

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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date JAN/2018
Scale 1/8" = 1'-0"
BCIN# 19669
LO# 77480