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:** 4202- ROSEDALE ALT 1ST **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.

September 10, 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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Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: PINE VALLEY & TESTON | ALT 1ST | DATE: Sep-18 | WINTER NATURAL AIR CHANGE RATE 0.340 | HEAT LOSS ΔT °F. 76 | CSA-F280-12
BUILDER: GOLD PARK HOMES | TYPE: 4202- ROSEDALE | GFA: 3592 | LO# 77529 | SUMMER NATURAL AIR CHANGE RATE 0.124 | HEAT GAIN ΔT °F. 16 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS			HERS			BED-2			BED-3			BED-4			ENS-2			LOFT			ENS-3			ENS-4				
EXP. WALL			47			34			8			18			36			12			0			39			9			11				
CLG. HT.			10			9			9			9			9			9			9			9			9			9				
	FACTORS																																
GRS.WALL AREA	LOSS	GAIN	470			306			72			162			324			108			0			351			81			99				
GLAZING			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			
NORTH	21.3	16.8	0	0	0	0	0	0	0	0	0	18	383	303	0	0	0	0	0	0	0	0	0	0	0	0	9	192	151	0	0	0		
EAST	21.3	42.4	0	0	0	0	0	0	0	0	0	0	0	0	53	1128	2247	0	0	0	0	0	0	41	872	1738	0	0	0	0	0	0		
SOUTH	21.3	25.7	0	0	0	11	234	283	0	0	0	0	0	0	0	0	0	18	383	463	0	0	0	20	426	515	0	0	0	9	192	232		
WEST	21.3	42.4	54	1149	2289	18	383	763	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	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	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	0	0	0		
NET EXPOSED WALL	4.5	0.9	416	1856	386	277	1236	257	72	321	67	144	643	134	271	1209	251	90	402	83	0	0	0	290	1294	269	72	321	67	90	402	83		
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	480	616	306	168	216	107	98	126	63	324	416	207	280	359	179	168	216	107	45	58	29	276	354	176	45	58	29	66	85	42		
NO ATTIC EXPOSED CLG	2.7	1.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	82	41	0	0	0	0	0	0		
EXPOSED FLOOR	2.6	0.5	0	0	0	0	0	0	0	0	0	144	367	76	280	714	148	0	0	0	40	102	21	50	128	27	45	115	24	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			3622			2069			447			1809			3411			1000			160			3156			685			678				
SUB TOTAL HT GAIN				2982			1410			129			719			2825			654			50			2766			271			357			
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				962			550			119			480			906			266			42			839			182			180				
AIR CHANGE HEAT GAIN					309			146			13			75			293			68			5			287			28			37		
DUCT LOSS				0			0			0			229			432			0			20			399			87			0			
DUCT GAIN					0			0			0			174			406			0			6			376			30			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					703			0			0			703			703			703			0			703			0			0		
TOTAL HT LOSS BTU/H				4584			2618			566			2518			4748			1266			222			4394			954			858			
TOTAL HT GAIN x 1.3 BTU/H					5816			2024			186			2484			5808			2164			79			5370			427			513		

ROOM USE			DIN				KT/GT			LIB			LAUN				FOY			MUD			HIS				LOD			BAS		
EXP. WALL			17				100			12			0				59			26			7				43			202		
CLG. HT.			11				11			11			9				11			12			9				10			10		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	187				1100			132			0				649			312			63				430			1672		
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		10	213	168	23	489	387	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	
EAST	21.3	42.4	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	
SOUTH	21.3	25.7	34	724	875		29	617	746	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	
WEST	21.3	42.4	0	0	0		123	2617	5214	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0		22	468	933	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		10	252	52	0	0	0	0	0	0		57	1439	299	20	505	105	0	0	0		0	0	0	20	505	105	
NET EXPOSED WALL	4.5	0.9	153	683	142		928	4141	861	109	486	101	0	0	0		592	2642	549	292	1303	271	63	281	58		0	0	0	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		236	849	177	348	1252	260	
EXPOSED CLG	1.3	0.6	0	0	0		0	0	0	0	0	0	96	123	61		0	0	0	0	0	0	84	108	54		0	0	0	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	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	84	214	45		0	0	0	0	0	0	
BASEMENT/CRAWL HEAT LOSS			0				0			0			0				0			0			0							6912			
SLAB ON GRADE HEAT LOSS			0				0			0			0				0			0			0				0						
SUBTOTAL HT LOSS			1406				7841			976			123				4081			1808			603				1317			8669			
SUB TOTAL HT GAIN				1017				7042			488			61				848			376			157				1109			365		
LEVEL FACTOR / MULTIPLIER			0.30	0.44			0.30	0.44		0.30	0.44		0.20	0.27			0.30	0.44		0.30	0.44		0.20	0.27						0.60	1.18		
AIR CHANGE HEAT LOSS				618				3445			429			33				1793			794			160							11797			
AIR CHANGE HEAT GAIN					105				730			51			6				88			39			16								153	
DUCT LOSS				0				0			0			0				0			0			76							0			
DUCT GAIN					0				0			0			0				0			0			17								0	
HEAT GAIN PEOPLE	240		0		0		0		0	0		0	0		0		0		0	0		0	0		0		0		0	0		0	0	
HEAT GAIN APPLIANCES/LIGHTS					703				703			703			703				0			703			0				0				703	
TOTAL HT LOSS BTU/H				2024				11286			1405			156				5874			2602			840				1317			20466			
TOTAL HT GAIN x 1.3 BTU/H					2373				11018			1614			1002				1217			1453			247				1442			1588	

TOTAL HEAT GAIN BTU/H: 47487 | TONS: 3.96 | LOSS DUE TO VENTILATION LOAD BTU/H: 3181 | STRUCTURAL HEAT LOSS: 68699 | TOTAL COMBINED HEAT LOSS BTU/H: 71880

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

ALT 1ST
TYPE: 4202- ROSEDALE

DATE: Sep-18

GFA: 3592 LO# 77529

HEATING CFM	1525	COOLING CFM	1525
TOTAL HEAT LOSS	68,699	TOTAL HEAT GAIN	46,826
AIR FLOW RATE CFM	22.2	AIR FLOW RATE CFM	32.57

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

^LENNOX
EL296UH090XE48C 90

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

AFUE = 96 %
INPUT (BTU/H) = 88,000
OUTPUT (BTU/H) = 85,000
DESIGN CFM = 1525
CFM @ .6 " E.S.P.
TEMPERATURE RISE 52 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	17	9	6
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	ENS	BED-2	BED-3	BED-4	ENS-2	LOFT	ENS-3	MBR	ENS-4	DIN	KT/GT	KT/GT	KT/GT	KT/GT	LAUN	LIB	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.29	1.31	1.31	2.52	1.58	1.27	0.22	2.20	0.95	2.29	0.86	2.02	2.82	2.82	2.82	2.82	0.16	1.40	2.94	2.60	3.63	3.63	3.63	3.63
CFM PER RUN HEAT	51	29	29	56	35	28	5	49	21	51	19	45	63	63	63	63	3	31	65	58	81	81	81	81
RM GAIN MBH.	2.91	1.01	1.01	2.48	1.94	2.16	0.08	2.69	0.43	2.91	0.51	2.37	2.75	2.75	2.75	2.75	1.00	1.61	0.61	1.45	0.50	0.50	0.50	0.50
CFM PER RUN COOLING	95	33	33	81	63	70	3	87	14	95	17	77	90	90	90	90	33	53	20	47	16	16	16	16
ADJUSTED PRESSURE	0.16	0.17	0.17	0.16	0.17	0.17	0.17	0.16	0.17	0.16	0.17	0.17	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	69	53	61	39	49	25	42	55	48	73	39	10	43	47	46	57	52	36	42	27	45	50	13	36
EQUIVALENT LENGTH	160	150	130	180	150	140	190	190	160	140	140	150	130	130	130	130	190	120	150	160	120	110	120	130
TOTAL EFFECTIVE LENGTH	229	203	191	219	199	165	232	245	208	213	179	160	173	177	176	187	242	156	192	187	165	160	133	166
ADJUSTED PRESSURE	0.07	0.08	0.09	0.07	0.09	0.1	0.07	0.07	0.08	0.08	0.1	0.11	0.09	0.09	0.09	0.09	0.07	0.11	0.09	0.09	0.1	0.1	0.12	0.1
ROUND DUCT SIZE	6	4	4	6	5	5	4	6	4	6	4	5	6	6	6	6	4	4	5	5	5	5	5	5
HEATING VELOCITY (ft/min)	260	333	333	286	257	206	57	250	241	260	218	330	321	321	321	321	34	356	477	426	595	595	595	595
COOLING VELOCITY (ft/min)	484	379	379	413	463	514	34	444	161	484	195	565	459	459	459	459	379	608	147	345	117	117	117	117
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	B	A	A	C	E	C	E	D	E	B	C	C	A	A	B	B	B	C	D	E	A	B	C	D

RUN #	25	26	27	28	29	30	31	32
ROOM NAME	BED-3	LOFT	BAS	FOY	HERS	HIS	BED-3	BAS
RM LOSS MBH.	1.58	2.20	3.63	2.94	0.57	0.84	1.58	3.63
CFM PER RUN HEAT	35	49	81	65	13	19	35	81
RM GAIN MBH.	1.94	2.69	0.50	0.61	0.19	0.25	1.94	0.50
CFM PER RUN COOLING	63	87	16	20	6	8	63	16
ADJUSTED PRESSURE	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.16
ACTUAL DUCT LGH.	45	57	33	40	50	60	58	22
EQUIVALENT LENGTH	140	150	180	150	180	150	160	120
TOTAL EFFECTIVE LENGTH	185	207	213	190	230	210	218	142
ADJUSTED PRESSURE	0.09	0.08	0.08	0.09	0.07	0.08	0.08	0.11
ROUND DUCT SIZE	5	6	5	5	4	4	5	5
HEATING VELOCITY (ft/min)	257	250	595	477	149	218	257	595
COOLING VELOCITY (ft/min)	463	444	117	147	69	92	463	117
OUTLET GRILL SIZE	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	E	D	D	D	B	B	E	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	265	0.08	8.5	8	x	8	596	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	344	0.07	9.7	12	x	8	516	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	950	0.07	14.2	24	x	8	713	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	390	0.07	10.2	12	x	8	585	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	579	0.07	11.8	16	x	8	651	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1525	0.06	17.7	32	x	10	686
TRUNK Y	470	0.06	11.4	16	x	8	529
TRUNK Z	940	0.06	14.7	26	x	8	651
DROP	1525	0.06	17.7	24	x	14	654

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	0	
AIR VOLUME	130	125	130	130	340	340	130	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	0.15
ACTUAL DUCT LGH.	62	69	49	53	30	52	56	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	155	165	145	185	185	140	150	0	0	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	217	234	194	238	215	192	206	1	1	1	1	1	1	1	1	1	159
ADJUSTED PRESSURE	0.07	0.06	0.08	0.06	0.07	0.08	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6.8	6.9	6.5	7	9.7	9.4	6.8	0	0	0	0	0	0	0	0	0	7.5
INLET GRILL SIZE	8	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	X
INLET GRILL SIZE	14	14	14	14	30	30	14	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

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

TYPE: 4202- ROSEDALE LO # 77529
SITE NAME: PINE VALLEY & TESTON ALT 1ST

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	8	@ 10.6 cfm	84.8	cfm
Table 9.32.3.A.		TOTAL	222.6	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	222.6	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	67.6	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: September-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.

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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#: 77529 Model: 4202- ROSEDALE Builder: GOLD PARK HOMES Date: 9/10/2018

Volume Calculation

House Volume

Level	Floor Area (ft^2)	Floor Height (ft)	Volume (ft^3)
Bsmt	1540	10	15400
First	1540	11	16940
Second	2076	9	18684
Third	0	9	0
Fourth	0	9	0
		Total:	51,024.0 ft^3
		Total:	1444.8 m^3

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 401.34 x 42 °C x 1.2 = **6915 W**

= **23594 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.124 x 401.34 x 9 °C x 1.2 = **524 W**

= **1789 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	23,594	9,986	1.181
2	0.3		16,113	0.439
3	0.2		17,763	0.266
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: 4202- ROSEDALE ALT 1ST **BUILDER:** GOLD PARK HOMES
SFQT: 3592 **LO#** 77529 **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):	51024.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 68.0 ft	WIDTH: 33.0 ft	EXPOSED PERIMETER:	202.0 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

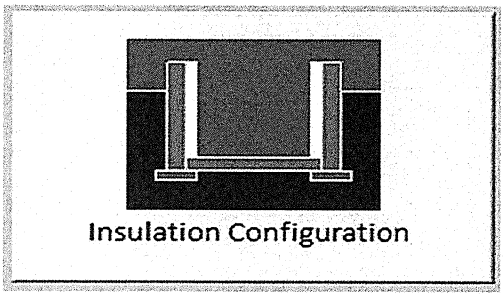
Michael O'Rourke

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):	**20.7**	 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):	**2.0**	
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):		**2025**

TYPE: 4202- ROSEDALE ALT 1ST
LO# 77529

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):	1444.8
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 1926.0 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: 4202- ROSEDALE ALT 1ST

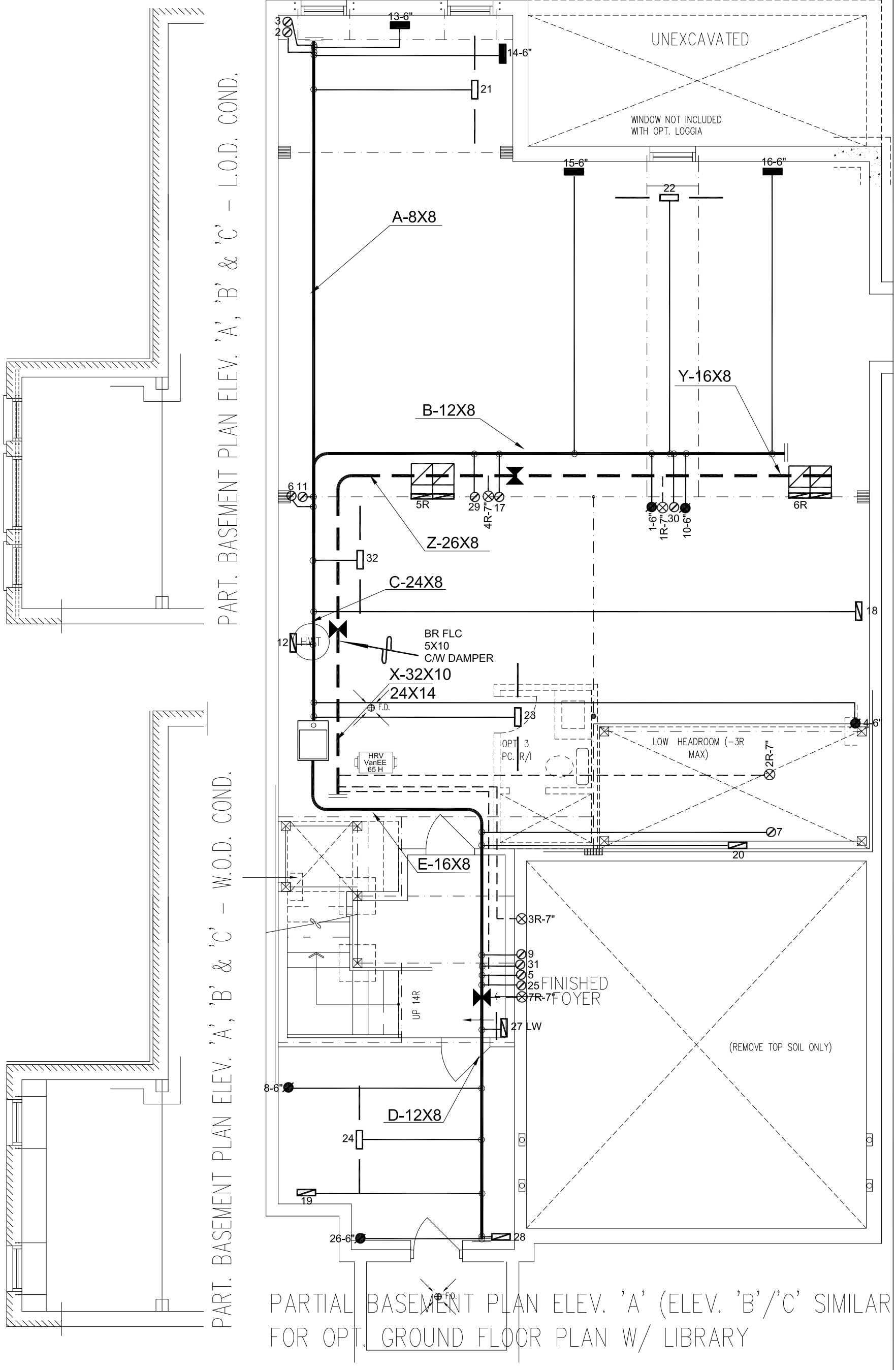
LO# 77529

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
	SUPPLY AIR BOOT ABOVE		SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		6" SUPPLY AIR STACK 2nd FLOOR
	FRA- FLOOR RETURN AIR GRILLE		14"x8" RETURN AIR GRILLE		30"x8" RETURN AIR GRILLE
	REDUCER		RETURN AIR STACK ABOVE		RETURN AIR STACK 2nd FLOOR

REVISIONS			
No.	Description	Date	
1.	DECK CONDITIONS ADDED	SEPT/2018	
2.	REVISED AS PER ARCHITECTURALS	FEB/2020	
3.			

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Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO
ALT. 1ST
ROSEDALE
4202 3592 sqft

HVAC DESIGNS LTD.
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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 71880 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	EL296UH090XE48C
INPUT	88 MBTU/H
OUTPUT	85 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1525 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	17	5	6
1ST FLOOR	9	2	2
BASEMENT	6	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"

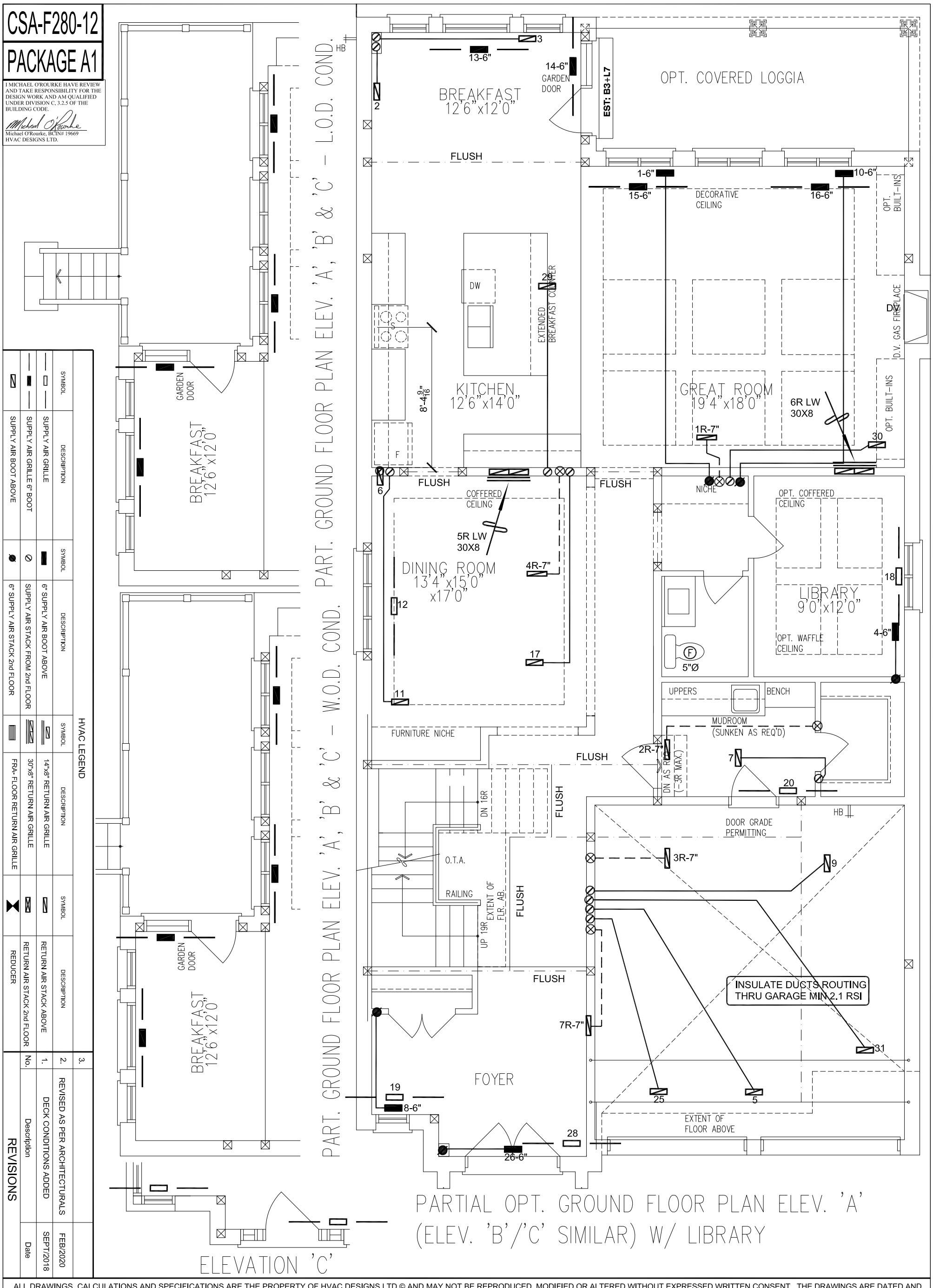
BCIN# 19669

LO# 77529

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
	SUPPLY AIR BOOT ABOVE
	SUPPLY AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT
	SUPPLY AIR STACK FROM 2nd FLOOR
	6" SUPPLY AIR BOOT ABOVE
	6" SUPPLY AIR STACK 2nd FLOOR
	14"x8" RETURN AIR GRILLE
	30"x8" RETURN AIR GRILLE
	FRA- FLOOR RETURN AIR GRILLE
	RETURN AIR STACK ABOVE
	RETURN AIR STACK 2nd FLOOR
	REDUCER

REVISIONS

No.	Description	Date
1.	DECK CONDITIONS ADDED	SEPT/2018
2.	REVISED AS PER ARCHITECTURALS	FEB/2020
3.		

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO
ALT. 1ST
ROSEDALE
4202 3592 sqft

HVAC DESIGNS LTD.
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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.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date JAN/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 77529

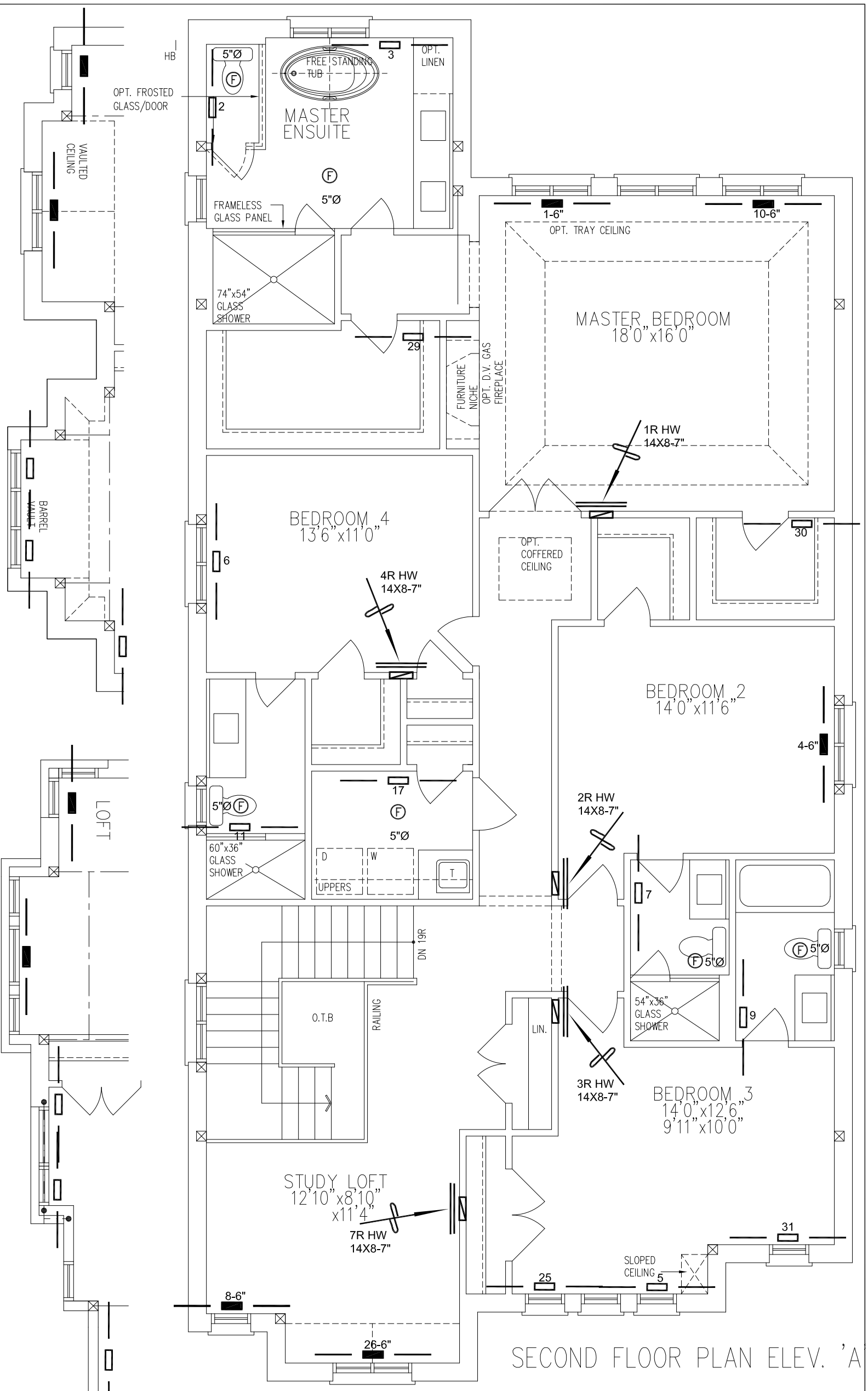
CSA-F280-12
PACKAGE A1

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.

PARTIAL SECOND FLOOR PLAN – ELEVATION 'B'

PARTIAL SECOND FLOOR PLAN – ELEVATION 'C'



SECOND FLOOR PLAN ELEV. 'A'

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE

SYMBOL	DESCRIPTION
	RETURN AIR STACK ABOVE
	RETURN AIR STACK 2nd FLOOR
	REDUCER

REVISIONS

No.	Description	Date
1.	DECK CONDITIONS ADDED	SEPT/2018
2.	REVISED AS PER ARCHITECTURALS	FEB/2020
3.		

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO
ALT. 1ST
ROSEDALE
4202 3592 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
SECOND FLOOR HEATING LAYOUT

Date JAN/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 77529

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:** 4202- ROSEDALE OPT. 5 BED - ALT 1ST **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.

October 5, 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.

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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 & TESTON | OPT. 5 BED - ALT 1ST | DATE: Nov-18 | WINTER NATURAL AIR CHANGE RATE 0.340 | HEAT LOSS ΔT °F. 76 | CSA-F280-12
BUILDER: GOLD PARK HOMES | TYPE: 4202- ROSEDALE | GFA: 3785 | LO# 80274 | SUMMER NATURAL AIR CHANGE RATE 0.124 | HEAT GAIN ΔT °F. 16 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			ENS-2			BED-5			ENS-3			ENS-4/5				
EXP. WALL			34			37				12			36			16			0			13			9			6				
CLG. HT.			10			9				9			9			9			9			9			9			9				
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	340			333				108			324			144			0			117			81			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		18	383	303	0	0	0	0	0	0	0	0	0	0	0	0	9	192	151	0	0	0		
EAST	21.3	42.4	0	0	0	0	0	0		0	0	0	53	1128	2247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SOUTH	21.3	25.7	0	0	0	0	0	0		0	0	0	0	0	0	38	809	978	0	0	0	18	383	463	0	0	0	0	0	0		
WEST	21.3	42.4	54	1149	2289	18	383	763		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	286	1276	265	315	1406	292		90	402	83	271	1209	251	106	473	98	0	0	0	99	442	92	72	321	67	54	241	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		
EXPOSED CLG	1.3	0.6	285	366	182	210	270	134		228	293	146	280	359	179	240	308	153	104	133	66	182	234	116	45	58	29	84	108	54		
NO ATTIC EXPOSED CLG	2.7	1.4	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		
EXPOSED FLOOR	2.6	0.5	0	0	0	0	0	0		0	0	0	280	714	148	0	0	0	50	128	27	0	0	0	25	64	13	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				2791			2058				1077			3411			1590			261			1058			634			349				
SUB TOTAL HT GAIN					2736			1189				532			2825			1230			93			671			260			104			
LEVEL FACTOR / MULTIPLIER			0.20	0.31		0.20	0.31			0.20	0.31		0.20	0.31		0.20	0.31		0.20	0.31		0.20	0.31		0.20	0.31		0.20	0.31			
AIR CHANGE HEAT LOSS				870			641				336			1063			495			81			330			198			109				
AIR CHANGE HEAT GAIN					307			133				60			317			138			10			75			29			12			
DUCT LOSS				0			0				0			447			0			34			0			83			0				
DUCT GAIN					0			0				0			421			0			10			0			29			0			
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	1		240	0		0	0		0			
HEAT GAIN APPLIANCES/LIGHTS					831			0				831			831			831			0			831			0			0			
TOTAL HT LOSS BTU/H				3661			2700				1413			4921			2085			377			1388			915			457				
TOTAL HT GAIN x 1.3 BTU/H					5661			1719				2161			6025			3170			148			2363			414			150			

ROOM USE			DIN				KT/GT			LIB			LAUN				FOY			MUD			WIC				LOD			BAS		
EXP. WALL			17				100			12			32				59			15			6				43			202		
CLG. HT.			11				11			12			9				11			12			9				10			10		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	187				1100			144			288				649			180			54				430			1672		
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		39	830	656	23	489	387	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
EAST	21.3	42.4	0	0	0		0	0	0	0	0	0	41	872	1738		7	149	297	0	0	0	0	0	0		0	0	0	0	0	0
SOUTH	21.3	25.7	34	724	875		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
WEST	21.3	42.4	0	0	0		123	2617	5214	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0		20	426	848	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		10	252	52	0	0	0	0	0	0		57	1439	299	20	505	105	0	0	0		0	0	0	20	505	105
NET EXPOSED WALL	4.5	0.9	153	683	142		928	4141	861	121	540	112	247	1102	229		585	2611	543	160	714	148	54	241	50		0	0	0	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		238	856	178	348	1252	260
EXPOSED CLG	1.3	0.6	0	0	0		0	0	0	0	0	0	388	498	248		0	0	0	0	0	0	84	108	54		0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.4	0	0	0		0	0	0	0	0	0	30	82	41		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	0	0	0	0	0	0		0	0	0	0	0	0	84	214	45		0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0				0			0			0				0			0			0							6921		
SLAB ON GRADE HEAT LOSS				0				0			0			0				0			0			0				0				
SUBTOTAL HT LOSS				1406				7841			1029			2555				4199			1219			563				1282			8678		
SUB TOTAL HT GAIN					1017				6783			499			2256				1139			253			148				1026			365	
LEVEL FACTOR / MULTIPLIER			0.30	0.49			0.30	0.49		0.30	0.49		0.20	0.31			0.30	0.49		0.30	0.49		0.20	0.31						0.50	1.28		
AIR CHANGE HEAT LOSS				685				3817			501			796				2044			593			175							12734		
AIR CHANGE HEAT GAIN					114				760			56			253				128			28			17								156
DUCT LOSS				0				0			0			0				0			0			74							0		
DUCT GAIN					0				0			0			0				0			0			16								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					831				831			831			831				0			0			0				0				831
TOTAL HT LOSS BTU/H				2091				11658			1531			3351				6243			1812			812				1282			21412	
TOTAL HT GAIN x 1.3 BTU/H					2551				10888			1802			4342				1646			366			236				1334			1758

TOTAL HEAT GAIN BTU/H: 47396 | TONS: 3.95 | LOSS DUE TO VENTILATION LOAD BTU/H: 3181 | STRUCTURAL HEAT LOSS: 68109 | TOTAL COMBINED HEAT LOSS BTU/H: 71290

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 — OPT. 5 BED - ALT 1ST
BUILDER: GOLD PARK HOMES — TYPE: 4202- ROSEDALE — DATE: Nov-18 — GFA: 3785 — LO# 80274

HEATING CFM	1525	COOLING CFM	1525	furnace pressure	0.6											
TOTAL HEAT LOSS	68,109	TOTAL HEAT GAIN	46,735	furnace filter	0.05											
AIR FLOW RATE CFM	22.39	AIR FLOW RATE CFM	32.63	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 = **1525**
CFM @ .6 " E.S.P.

TEMPERATURE RISE 52 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	9	6
R/A	0	0	6	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	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	ENS	BED-2	BED-3	BED-5	ENS-2	LAUN	ENS-3	MBR	BED-4	DIN	KT/GT	KT/GT	KT/GT	KT/GT	LIB	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.83	1.35	1.35	1.41	1.64	1.39	0.38	1.68	0.92	1.83	2.08	2.09	2.91	2.91	2.91	2.91	1.53	3.12	1.81	3.78	3.78	3.78	3.78
CFM PER RUN HEAT	41	30	30	32	37	31	8	38	20	41	47	47	65	65	65	65	34	70	41	85	85	85	85
RM GAIN MBH.	2.83	0.86	0.86	2.16	2.01	2.36	0.15	2.17	0.41	2.83	3.17	2.55	2.72	2.72	2.72	2.72	1.80	0.82	0.37	0.52	0.52	0.52	0.52
CFM PER RUN COOLING	92	28	28	71	66	77	5	71	13	92	103	83	89	89	89	89	59	27	12	17	17	17	17
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	69	53	61	60	49	25	42	55	48	73	23	10	43	47	46	57	36	42	27	45	50	13	36
EQUIVALENT LENGTH	160	150	130	190	150	140	190	190	160	140	190	150	130	130	130	130	120	150	160	120	110	120	130
TOTAL EFFECTIVE LENGTH	229	203	191	250	199	165	232	245	208	213	213	160	173	177	176	187	156	192	187	165	160	133	166
ADJUSTED PRESSURE	0.07	0.08	0.09	0.07	0.09	0.1	0.07	0.07	0.08	0.08	0.08	0.1	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.1	0.1	0.12	0.1
ROUND DUCT SIZE	**6**	4	4	5	5	**6**	4	5	4	**6**	**6**	**6**	**6**	**6**	**6**	**6**	5	5	4	5	5	5	5
HEATING VELOCITY (ft/min)	209	344	344	235	272	158	92	279	229	209	240	240	331	331	331	331	250	514	470	624	624	624	624
COOLING VELOCITY (ft/min)	469	321	321	521	485	393	57	521	149	469	525	423	454	454	454	454	433	198	138	125	125	125	125
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	B	A	A	C	E	C	E	D	E	B	E	C	A	A	B	B	C	D	E	A	B	C	D

RUN #	25	26	27	28		30	31	32	33
ROOM NAME	BED-3	LAUN	BAS	FOY		WIC	BED-3	BAS	ENS-4/5
RM LOSS MBH.	1.64	1.68	3.78	3.12		0.81	1.64	3.78	0.46
CFM PER RUN HEAT	37	38	85	70		18	37	85	10
RM GAIN MBH.	2.01	2.17	0.52	0.82		0.24	2.01	0.52	0.15
CFM PER RUN COOLING	66	71	17	27		8	66	17	5
ADJUSTED PRESSURE	0.17	0.17	0.16	0.17		0.17	0.17	0.16	0.17
ACTUAL DUCT LGH.	45	57	33	40		60	58	22	39
EQUIVALENT LENGTH	140	150	180	150		150	160	120	140
TOTAL EFFECTIVE LENGTH	185	207	213	190		210	218	142	179
ADJUSTED PRESSURE	0.09	0.08	0.08	0.09		0.08	0.08	0.11	0.1
ROUND DUCT SIZE	5	5	**6**	5		4	5	5	4
HEATING VELOCITY (ft/min)	272	279	433	514		207	272	624	115
COOLING VELOCITY (ft/min)	485	521	87	198		92	485	125	57
OUTLET GRILL SIZE	3X10	3X10	4X10	3X10		3X10	3X10	3X10	3X10
TRUNK	E	D	D	D		B	E	C	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	275	0.08	8.6	8	x	8	619	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	315	0.07	9.4	10	x	8	567	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	914	0.07	14	22	x	8	748	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	386	0.07	10.2	12	x	8	579	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	613	0.07	12.1	18	x	8	613	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1165	0.06	16	32	x	8	655
TRUNK Y	430	0.06	11	14	x	8	553
TRUNK Z	920	0.06	14.6	24	x	8	690
DROP	1525	0.06	17.7	24	x	14	654

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	130	130	130	130	360	300	50	50	0	0	0	0	0	0	0	245
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.	62	69	49	53	30	52	60	57	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	155	165	145	185	185	140	205	205	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	217	234	194	238	215	192	265	262	1	1	1	1	1	1	1	159
ADJUSTED PRESSURE	0.07	0.06	0.08	0.06	0.07	0.08	0.06	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6.8	7	6.5	7	9.9	8.9	4.9	4.9	0	0	0	0	0	0	0	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	30	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.

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: 4202- ROSEDALE LO # 80274
SITE NAME: PINE VALLEY & TESTON OPT. 5 BED - ALT 1ST

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	4	@ 10.6 cfm	42.4	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	212.0	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	**95.4**	**cfm**

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	212	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	57.0	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-4/5	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: October-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.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 80274 Model: 4202- ROSEDALE Builder: GOLD PARK HOMES Date: 10/5/2018

Volume Calculation

House Volume

Level	Floor Area (ft^2)	Floor Height (ft)	Volume (ft^3)
Bsmt	1733	10	17330
First	1733	11	19063
Second	2076	9	18684
Third	0	9	0
Fourth	0	9	0
		Total:	55,077.0 ft^3
		Total:	1559.6 m^3

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 433.22 x 42 °C x 1.2 = 7464 W

= 25468 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

= 0.124 x 433.22 x 9 °C x 1.2 = 566 W

= 1931 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	25,468	9,960	1.278
2	0.3		15,641	0.488
3	0.2		16,904	0.301
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
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	4202- ROSEDALE		OPT. 5 BED - ALT 1ST	**BUILDER:**	GOLD PARK HOMES
SFQT:	3785	**LO#**	80274	**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):	55077.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 68.0 ft	WIDTH: 33.0 ft	EXPOSED PERIMETER:	202.0 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

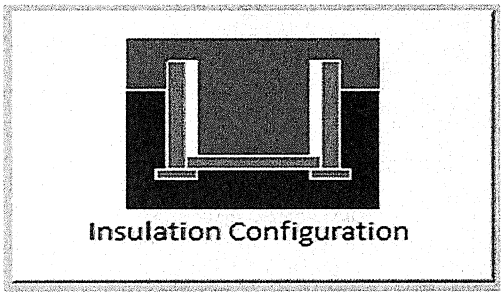
Michael O'Rourke.

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):	**20.7**	 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):	**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):		**2028**

TYPE: 4202- ROSEDALE OPT. 5 BED - ALT 1ST
LO# 80274

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):	1559.6
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 2079.0 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: 4202- ROSEDALE OPT. 5 BED - ALT 1ST

LO# 80274

CSA-F280-12

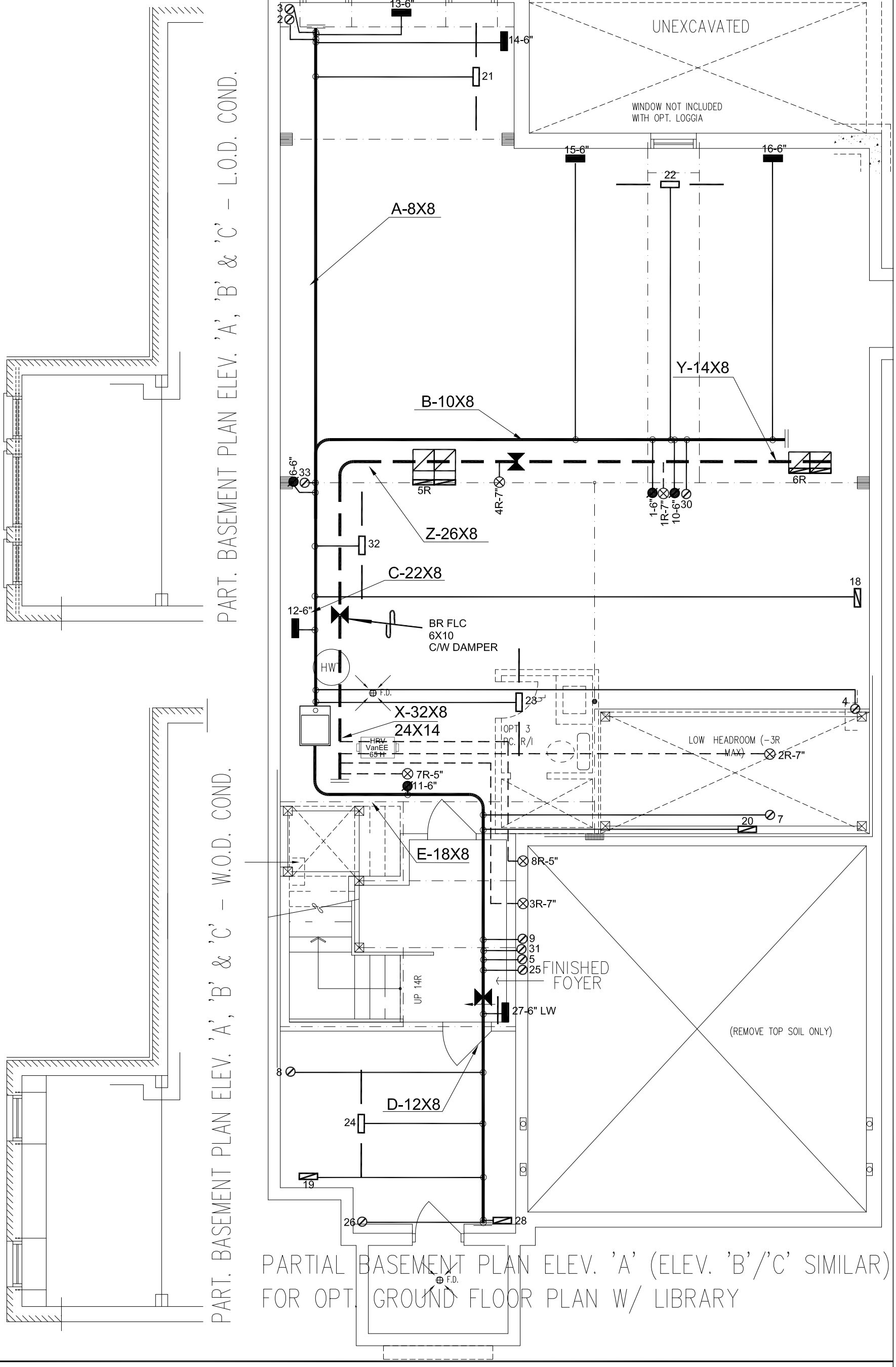
PACKAGE A1

WOD

LOD

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
	SUPPLY AIR BOOT ABOVE		SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		6" SUPPLY AIR STACK 2nd FLOOR
	14"x8" RETURN AIR GRILLE		30"x8" RETURN AIR GRILLE		FRA- FLOOR RETURN AIR GRILLE
	RETURN AIR STACK ABOVE		RETURN AIR STACK 2nd FLOOR		REDUCER

REVISIONS

No.	Description	Date
1.	ADDED RETURN #8 TO HALL	NOV/2018
2.	REVISED AS PER ARCHITECTURALS	FEB/2020
3.		

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Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT. 5 BED
ROSEDALE - ALT 1ST
4202 3785 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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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 71290 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	EL296UH090XE48C
INPUT	88 MBTU/H
OUTPUT	85 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1525 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	16	5	5
1ST FLOOR	9	2	2
BASEMENT	6	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/2018

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 80274

CSA-F280-12

PACKAGE A1

WOD

LOD

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.

PART. GROUND FLOOR PLAN ELEV. 'A', 'B' & 'C' – L.O.D. COND.

PART. GROUND FLOOR PLAN ELEV. 'A', 'B' & 'C' – W.O.D. COND.

BREAKFAST 12'6"x12'0"

GARDEN DOOR

HB

13-6"

3

2

14-6" GARDEN DOOR

EST: B3+L7

OPT. COVERED LOGGIA

FLUSH

1-6"

15-6"

DECORATIVE CEILING

10-6"

16-6"

OPT. BUILT-INS

DW

EXTENDED BREAKFAST COUNTER

GREAT ROOM 19'4"x18'0"

D.V. GAS FIREPLACE

6-6"

8'-4 9/16"

KITCHEN 12'6"x14'0"

4R-7"

1R+7"

6R FRA 24X6

30

OPT. BUILT-INS

F

FLUSH

B3

COFFERED CEILING

FLUSH

NICHE

OPT. COFFERED CEILING

5R LW 30X8

DINING ROOM 13'4"x15'0" x17'0"

18

LIBRARY 9'0"x12'0"

12-6"

4

11-6"

7R-5"

OPT. WAFFLE CEILING

F

5"Ø

FLUSH

UPPERS

BENCH

MUDROOM (SUNKEN AS REQ'D)

FURNITURE NICHE

2R+7"

DN AS REQ'D (-3R MAX.)

7

FLUSH

20

DN 16R

FLUSH

8R-5"

HB

O.T.A.

3R-7"

9

RAILING

UP 19R

EXTENT OF FLR. AB.

FLUSH

INSULATE DUCTS ROUTING THRU GARAGE MIN 2.1 RSI

31

FOYER

19

8

25

5

EXTENT OF FLOOR ABOVE

28

26

LOW HORM.

GARDEN DOOR

BREAKFAST 12'6"x12'0"

PAGROUND FLOOR PLAN ELEV. 'A'
(ELEV. 'B'/'C' SIMILAR) W/ LIBRARY

ELEVATION 'C'

ELEVATION 'B'

HVAC LEGEND

SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT
	SUPPLY AIR BOOT ABOVE
⊘	SUPPLY AIR STACK FROM 2nd FLOOR
●	6" SUPPLY AIR STACK 2nd FLOOR

SYMBOL	DESCRIPTION
	6" SUPPLY AIR BOOT ABOVE
	14"x8" RETURN AIR GRILLE
	30"x8" RETURN AIR GRILLE
	FRA- FLOOR RETURN AIR GRILLE

SYMBOL	DESCRIPTION
	RETURN AIR STACK ABOVE
	RETURN AIR STACK 2nd FLOOR
	REDUCER

REVISIONS

No.	Description	Date
1.	ADDED RETURN #8 TO HALL	NOV/2018
2.	REVISED AS PER ARCHITECTURALS	FEB/2020
3.		

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Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT. 5 BED
ROSEDALE - ALT 1ST
4202 3785 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/2018

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 80274

CSA-F280-12

PACKAGE A1

WOD

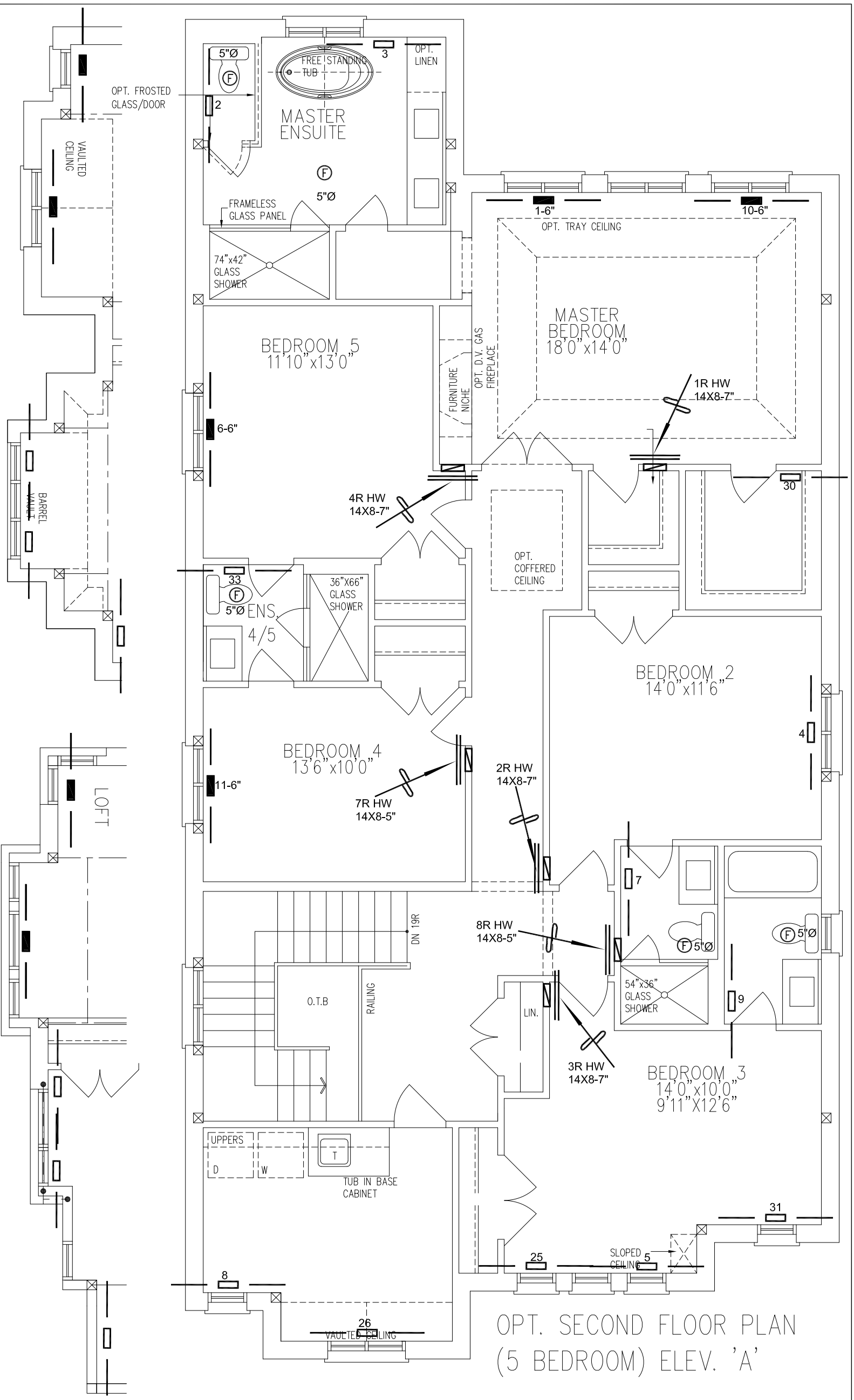
LOD

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.

PARTIAL SECOND FLOOR PLAN – ELEVATION 'B'

PARTIAL SECOND FLOOR PLAN – ELEVATION 'C'



HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE

SYMBOL	DESCRIPTION
	RETURN AIR STACK ABOVE
	RETURN AIR STACK 2nd FLOOR
	REDUCER

REVISIONS

No.	Description	Date
1.	ADDED RETURN #8 TO HALL	NOV/2018
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Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT. 5 BED
ROSEDALE - ALT 1ST
4202 3785 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.

Sheet Title

SECOND FLOOR HEATING LAYOUT

Date OCT/2018

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 80274

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:** 4202- ROSEDALE OPT. 5 BED - ALT 1ST - WOB **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.

October 5, 2018
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.
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 | OPT. 5 BED - ALT 1ST - WOB | DATE: Nov-18 | WINTER NATURAL AIR CHANGE RATE 0.407 | HEAT LOSS ΔT °F. 76 | CSA-F280-12

BUILDER: GOLD PARK HOMES | TYPE: 4202- ROSEDALE | GFA: 3785 | LO# 80275 | SUMMER NATURAL AIR CHANGE RATE 0.137 | HEAT GAIN ΔT °F. 13 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			ENS-2			BED-5			ENS-3			ENS-4/5				
EXP. WALL			34			37				12			36			16			0			13			9			6				
CLG. HT.			10			9				9			9			9			9			9			9			9				
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	340			333				108			324			144			0			117			81			54				
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			
NORTH	21.3	16.0	0	0	0	0	0	0		18	383	288	0	0	0	0	0	0	0	0	0	0	0	0	9	192	144	0	0	0		
EAST	21.3	41.6	0	0	0	0	0	0		0	0	0	53	1128	2202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SOUTH	21.3	24.9	0	0	0	0	0	0		0	0	0	0	0	0	38	809	946	0	0	0	18	383	448	0	0	0	0	0	0		
WEST	21.3	41.6	54	1149	2244	18	383	748		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SKYLT.	37.2	101.5	0	0	0	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	4.3	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	0.8	286	1276	215	315	1406	237		90	402	68	271	1209	204	106	473	80	0	0	0	99	442	74	72	321	54	54	241	41		
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.6	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
EXPOSED CLG	1.3	0.6	285	366	167	210	270	123		228	293	134	280	359	165	240	308	141	104	133	61	182	234	107	45	58	26	84	108	49		
NO ATTIC EXPOSED CLG	2.7	1.3	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		
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0		0	0	0	280	714	120	0	0	0	50	128	21	0	0	0	25	64	11	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				2791			2058				1077			3411			1590			261			1058			634			349			
SUB TOTAL HT GAIN					2626			1108				489			2691			1167			83			630			235			90		
LEVEL FACTOR / MULTIPLIER			0.20	0.37		0.20	0.37			0.20	0.37		0.20	0.37		0.20	0.37		0.20	0.37		0.20	0.37		0.20	0.37		0.20	0.37			
AIR CHANGE HEAT LOSS				1041			767				402			1271			593			97			395			236			130			
AIR CHANGE HEAT GAIN					228			96				43			234			101			7			55			20			8		
DUCT LOSS				0			0				0			468			0			36			0			87			0			
DUCT GAIN					0			0				0			387			0			9			0			26			0		
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	1		240	0		0	0		0		
HEAT GAIN APPLIANCES/LIGHTS					704			0				704			704			704			0			704			0			0		
TOTAL HT LOSS BTU/H				3832			2826				1479			5150			2182			394			1453			958			479			
TOTAL HT GAIN x 1.3 BTU/H					5250			1566				1918			5532			2876			128			2117			365			127		

ROOM USE			DIN				KT/GT			LIB			LAUN				FOY			MUD			WIC				WOB			BAS		
EXP. WALL			17				100			12			32				59			15			6				43			159		
CLG. HT.			11				11			11			9				11			12			9				10			10		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	187				1100			132			288				649			180			54				430			1113		
GLAZING				LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN
NORTH	21.3	16.0	0	0	0		39	830	623	23	489	367	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
EAST	21.3	41.6	0	0	0		0	0	0	0	0	0	41	872	1704		7	149	291	0	0	0	0	0	0		0	0	0	0	0	0
SOUTH	21.3	24.9	34	724	847		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0		19	404	473	0	0	0
WEST	21.3	41.6	0	0	0		123	2617	5111	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0		106	2256	4405	0	0	0
SKYLT.	37.2	101.5	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	4.3	0	0	0		10	252	43	0	0	0	0	0	0		57	1439	242	20	505	85	0	0	0		10	252	43	20	505	85
NET EXPOSED WALL	4.5	0.8	153	683	115		928	4141	697	109	486	82	247	1102	186		585	2611	440	160	714	120	54	241	41		295	1317	222	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	0	0	0		0	0	0	477	1716	289
EXPOSED CLG	1.3	0.6	0	0	0		0	0	0	0	0	0	388	498	228		0	0	0	0	0	0	84	108	49		0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0		0	0	0	0	0	0	30	82	38		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.4	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	84	214	36		0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0				0			0			0				0			0			0							2560		
SLAB ON GRADE HEAT LOSS				0				0			0			0				0			0			0				552				
SUBTOTAL HT LOSS				1406				7841			976			2555				4199			1219			563				4781			4782		
SUB TOTAL HT GAIN					962				6474			449			2155				973			205			126				5142			374
LEVEL FACTOR / MULTIPLIER			0.30	0.58			0.30	0.58		0.30	0.58		0.20	0.37			0.30	0.58		0.30	0.58		0.20	0.37						0.50	1.59		
AIR CHANGE HEAT LOSS				822				4583			570			953				2454			712			210							15236		
AIR CHANGE HEAT GAIN					84				563			39			187				85			18			11								479
DUCT LOSS				0				0			0			0				0			0			77							0		
DUCT GAIN					0				0			0			0				0			0			14								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					704				704			704			704				0			0			0				0				704
TOTAL HT LOSS BTU/H				2228				12424			1546			3508				6653			1931			850				5332			20018	
TOTAL HT GAIN x 1.3 BTU/H					2274				10062			1550			3960				1375			290			196				6684			2025

TOTAL HEAT GAIN BTU/H: 48830 | TONS: 4.07 | LOSS DUE TO VENTILATION LOAD BTU/H: 3181 | STRUCTURAL HEAT LOSS: 73244 | TOTAL COMBINED HEAT LOSS BTU/H: 76424

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 — OPT. 5 BED - ALT 1ST - WOB
BUILDER: GOLD PARK HOMES — TYPE: 4202- ROSEDALE — DATE: Nov-18 — GFA: 3785 — LO# 80275

HEATING CFM	1525	COOLING CFM	1525	furnace pressure	0.6					^LENNOX		AFUE = 96 %
TOTAL HEAT LOSS	73,244	TOTAL HEAT GAIN	48,294	furnace filter	0.05					EL296UH090XE48C	90	INPUT (BTU/H) = 88,000
AIR FLOW RATE CFM	20.82	AIR FLOW RATE CFM	31.58	a/c coil pressure	0.2					FAN SPEED		OUTPUT (BTU/H) = **85,000**
				available pressure for s/a & r/a	0.35					LOW	0	
										MEDLOW	0	DESIGN CFM = **1525**
				plenum pressure s/a	0.18	r/a pressure	0.17			MEDIUM	1105	CFM @ .6 " E.S.P.
				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	TEMPERATURE RISE 52 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	9	7
R/A	0	0	6	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	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	ENS	BED-2	BED-3	BED-5	ENS-2	LAUN	ENS-3	MBR	BED-4	DIN	KT/GT	KT/GT	KT/GT	KT/GT	LIB	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.92	1.41	1.41	1.48	1.72	1.45	0.39	1.75	0.96	1.92	2.18	2.23	3.11	3.11	3.11	3.11	1.55	3.33	1.93	3.62	3.62	3.62	3.62
CFM PER RUN HEAT	40	29	29	31	36	30	8	37	20	40	45	46	65	65	65	65	32	69	40	75	75	75	75
RM GAIN MBH.	2.62	0.78	0.78	1.92	1.84	2.12	0.13	1.98	0.37	2.62	2.88	2.27	2.52	2.52	2.52	2.52	1.55	0.69	0.29	1.24	1.24	1.24	1.24
CFM PER RUN COOLING	83	25	25	61	58	67	4	63	12	83	91	72	79	79	79	79	49	22	9	39	39	39	39
ADJUSTED PRESSURE	0.16	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	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	69	53	61	60	49	25	42	55	48	73	23	10	43	47	46	57	36	42	27	57	50	13	36
EQUIVALENT LENGTH	160	150	130	190	150	140	190	190	160	140	190	150	130	130	130	130	120	150	160	170	110	120	130
TOTAL EFFECTIVE LENGTH	229	203	191	250	199	165	232	245	208	213	213	160	173	177	176	187	156	192	187	227	160	133	166
ADJUSTED PRESSURE	0.07	0.08	0.09	0.07	0.09	0.1	0.07	0.07	0.08	0.08	0.08	0.11	0.1	0.1	0.1	0.09	0.11	0.09	0.09	0.08	0.11	0.13	0.1
ROUND DUCT SIZE	**6**	4	4	5	5	**6**	4	5	4	**6**	**6**	**6**	5	5	5	5	5	5	4	5	5	5	5
HEATING VELOCITY (ft/min)	204	333	333	228	264	153	92	272	229	204	229	235	477	477	477	477	235	507	459	551	551	551	551
COOLING VELOCITY (ft/min)	423	287	287	448	426	342	46	463	138	423	464	367	580	580	580	580	360	162	103	286	286	286	286
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	B	A	A	C	E	C	E	D	E	B	E	C	A	A	B	B	C	D	E	A	B	C	D

RUN #	25	26	27	28	29	30	31	32	33
ROOM NAME	BED-3	LAUN	BAS	FOY	BAS	WIC	BED-3	BAS	ENS-4/5
RM LOSS MBH.	1.72	1.75	3.62	3.33	3.62	0.85	1.72	3.62	0.48
CFM PER RUN HEAT	36	37	75	69	75	18	36	75	10
RM GAIN MBH.	1.84	1.98	1.24	0.69	1.24	0.20	1.84	1.24	0.13
CFM PER RUN COOLING	58	63	39	22	39	6	58	39	4
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	45	57	33	40	66	60	58	22	39
EQUIVALENT LENGTH	140	150	180	150	140	150	160	120	140
TOTAL EFFECTIVE LENGTH	185	207	213	190	206	210	218	142	179
ADJUSTED PRESSURE	0.09	0.08	0.08	0.09	0.08	0.08	0.08	0.12	0.1
ROUND DUCT SIZE	5	5	5	5	5	4	5	5	4
HEATING VELOCITY (ft/min)	264	272	551	507	551	207	264	551	115
COOLING VELOCITY (ft/min)	426	463	286	162	286	69	426	286	46
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	E	D	D	D	B	B	E	C	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	263	0.08	8.5	8	x	8	592	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	378	0.07	10.1	12	x	8	567	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	940	0.07	14.2	24	x	8	705	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	362	0.07	9.9	12	x	8	543	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	583	0.07	11.8	16	x	8	656	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1165	0.06	16	32	x	8	655
TRUNK Y	430	0.06	11	14	x	8	553
TRUNK Z	920	0.06	14.6	24	x	8	690
DROP	1525	0.06	17.7	24	x	14	654

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	130	130	130	130	360	300	50	50	0	0	0	0	0	0	0	245
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.	62	69	49	53	30	52	60	57	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	155	165	145	185	185	140	205	205	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	217	234	194	238	215	192	265	262	1	1	1	1	1	1	1	159
ADJUSTED PRESSURE	0.07	0.06	0.08	0.06	0.07	0.08	0.06	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6.8	7	6.5	7	9.9	8.9	4.9	4.9	0	0	0	0	0	0	0	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	30	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

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TYPE: 4202- ROSEDALE LO # 80275
SITE NAME: PINE VALLEY & TESTON OPT. 5 BED - ALT 1ST - WOB

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	4	@ 10.6 cfm	42.4	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	212.0	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	95.4	cfm

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	212	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	57.0	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-4/5	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: October-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

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 80275 Model: 4202- ROSEDALE Builder: GOLD PARK HOMES Date: 10/5/2018

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1733	10	17330
First	1733	11	19063
Second	2076	9	18684
Third	0	9	0
Fourth	0	9	0
		Total:	55,077.0 ft³
		Total:	1559.6 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.407
SUMMER NATURAL AIR CHANGE RATE	0.137

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

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

0.407 x 433.22 x 42 °C x 1.2 = 8931 W

= 30472 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

= 0.137 x 433.22 x 7 °C x 1.2 = 505 W

= 1722 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 13 °F x 1.08 x 0.25 = 536 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	30,472	9,602	1.587
2	0.3		15,641	0.584
3	0.2		16,904	0.361
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: 4202- ROSEDALE OPT. 5 BED - ALT 1ST - WOB **BUILDER:** GOLD PARK HOMES
SFQT: 3785 **LO#** 80275 **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)	75

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):	55077.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
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: 68.0 ft	WIDTH: 33.0 ft	EXPOSED PERIMETER:	159.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	43.0 ft

2012 OBC - COMPLIANCE PACKAGE	**Compliance Package A1**	
Component	**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

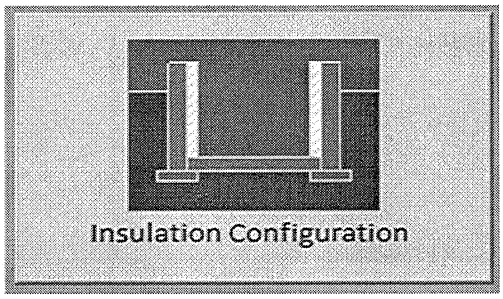
Michael O'Rourke

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)

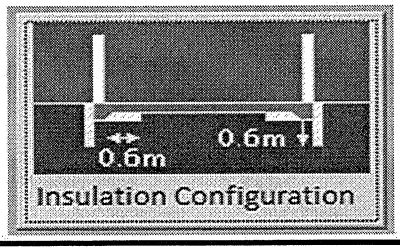
Foundation Dimensions		
Floor Length (m):	4.6	 Insulation Configuration
Floor Width (m):	10.1	
Exposed Perimeter (m):	48.5	
Wall Height (m):	3.0	
Depth Below Grade (m):	1.79	
Window Area (m^2):	0.0	
Door Area (m^2):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	**750**	

TYPE: 4202- ROSEDALE OPT. 5 BED - ALT 1ST - WOB
LO# 80275

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		
Length (m):	1.5	
Width (m):	10.1	
Exposed Perimeter (m):	13.1	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):	**162**	

TYPE: 4202- ROSEDALE OPT. 5 BED - ALT 1ST - WOB

LO# 80275

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):	9.14				
Building Configuration					
Type:	Detached				
Number of Stories:	Two				
Foundation:	Full				
House Volume (m^3):	1559.6				
Air Leakage/Ventilation					
Air Tightness Type:	Present (1961-) (3.57 ACH)				
Custom BDT Data:	ELA @ 10 Pa.				2079.0 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):	**0.407**				
Cooling Air Leakage Rate (ACH/H):	**0.137**				

TYPE: 4202- ROSEDALE OPT. 5 BED - ALT 1ST - WOB

LO# 80275

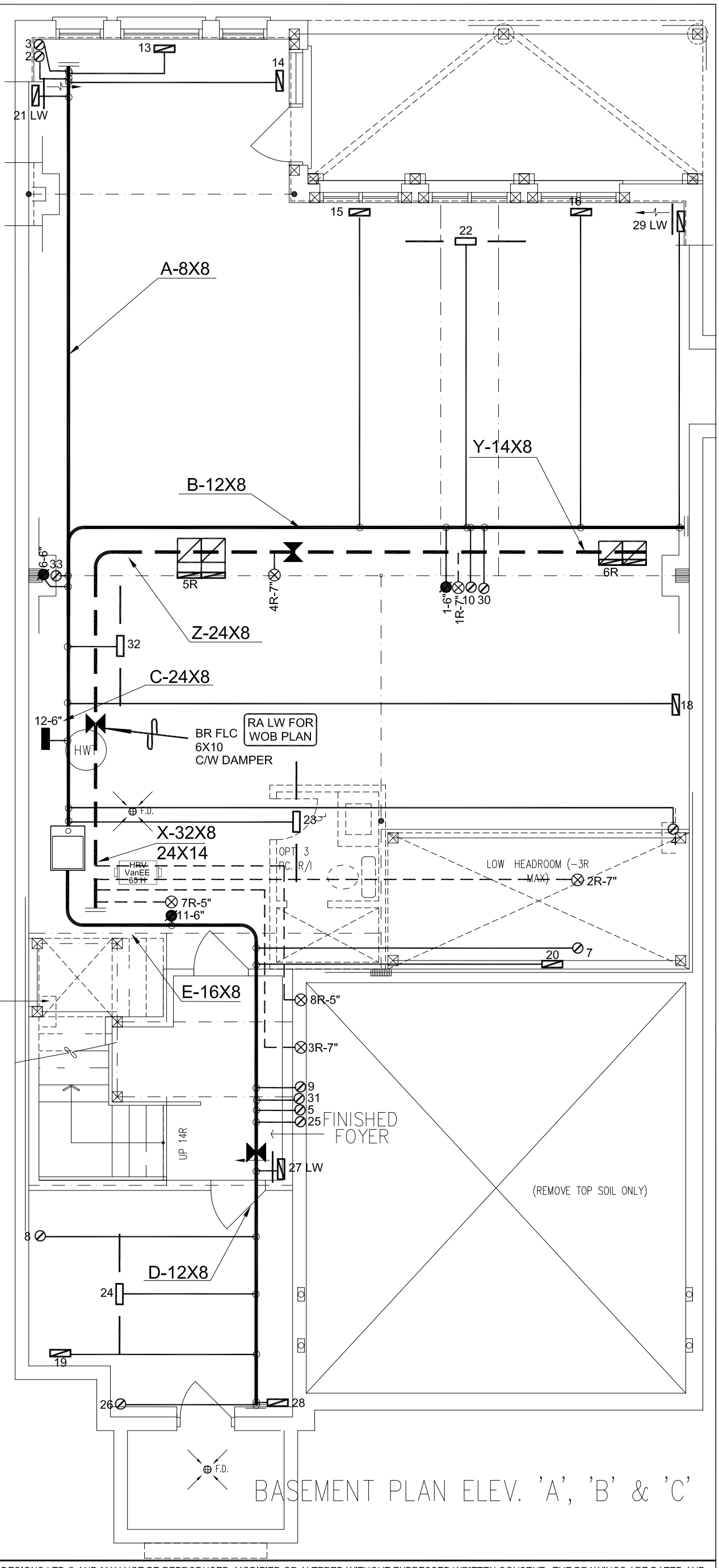
CSA-F280-12

PACKAGE A1

WOB

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.



BASEMENT PLAN ELEV. 'A', 'B' & 'C'

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		6" SUPPLY AIR STACK 2nd FLOOR
	FRA- FLOOR RETURN AIR GRILLE		30"x8" RETURN AIR GRILLE		14"x8" RETURN AIR GRILLE
	REDUCER		RETURN AIR STACK 2nd FLOOR		RETURN AIR STACK ABOVE

REVISIONS

No.	Description	Date
1.	ADDED RETURN #8 TO HALL	NOV/2018
2.	REVISED AS PER ARCHITECTURALS	FEB/2020
3.		

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Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT. 5 BED - WOB
ROSEDALE - ALT 1ST
4202 3785 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services

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

HEAT LOSS 76424 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	EL296UH090XE48C
INPUT	88 MBTU/H
OUTPUT	85 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1525 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	16	5	5
1ST FLOOR	9	2	2
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 OCT/2018

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 80275

CSA-F280-12

PACKAGE A1

WOB

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

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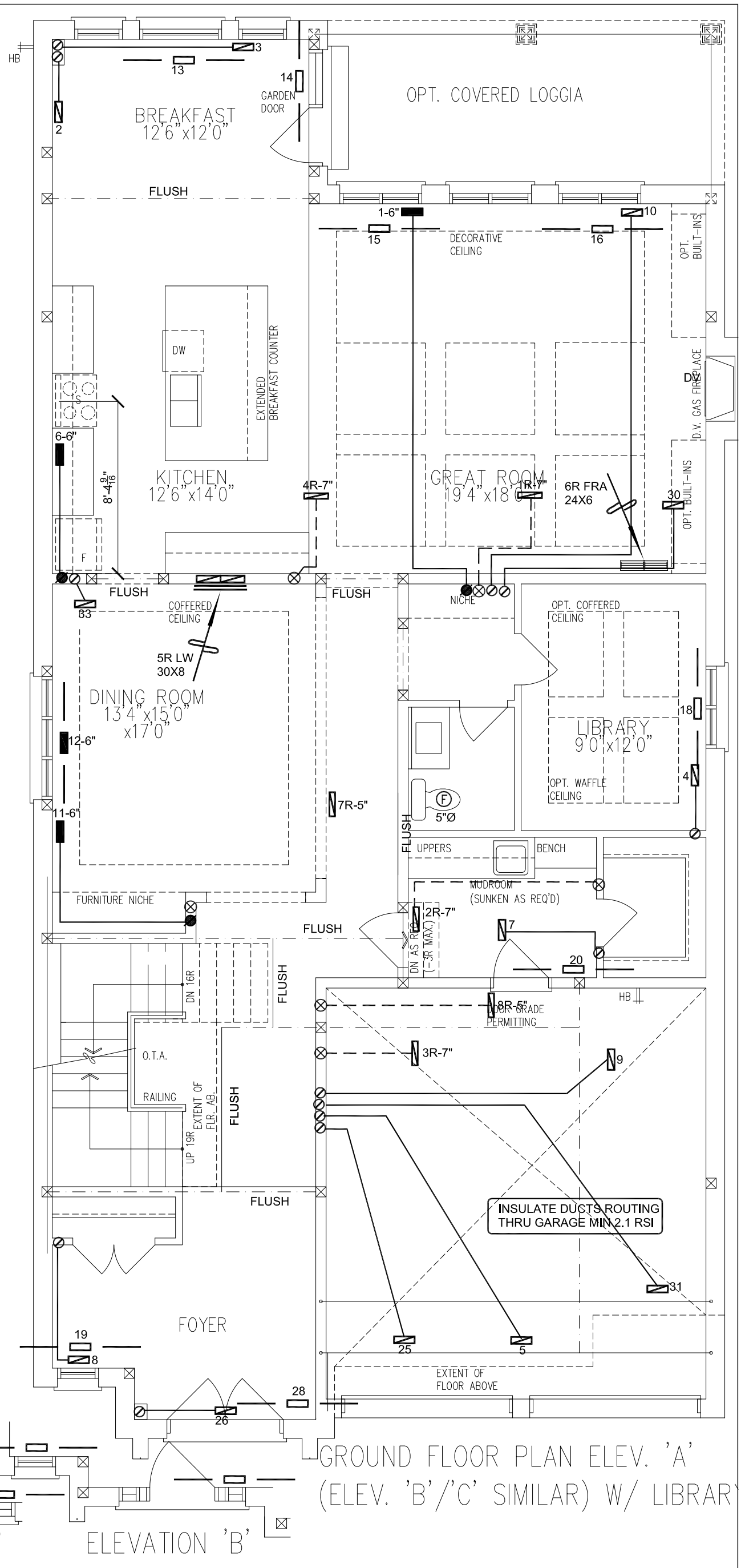

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE

SYMBOL	DESCRIPTION
	RETURN AIR STACK ABOVE
	RETURN AIR STACK 2nd FLOOR
	REDUCER

REVISIONS

No.	Description	Date
1.	ADDED RETURN #8 TO HALL	NOV/2018
2.	REVISED AS PER ARCHITECTURALS	FEB/2020
3.		

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT. 5 BED - WOB
ROSEDALE - ALT 1ST
4202 3785 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.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date OCT/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 80275

CSA-F280-12

PACKAGE A1

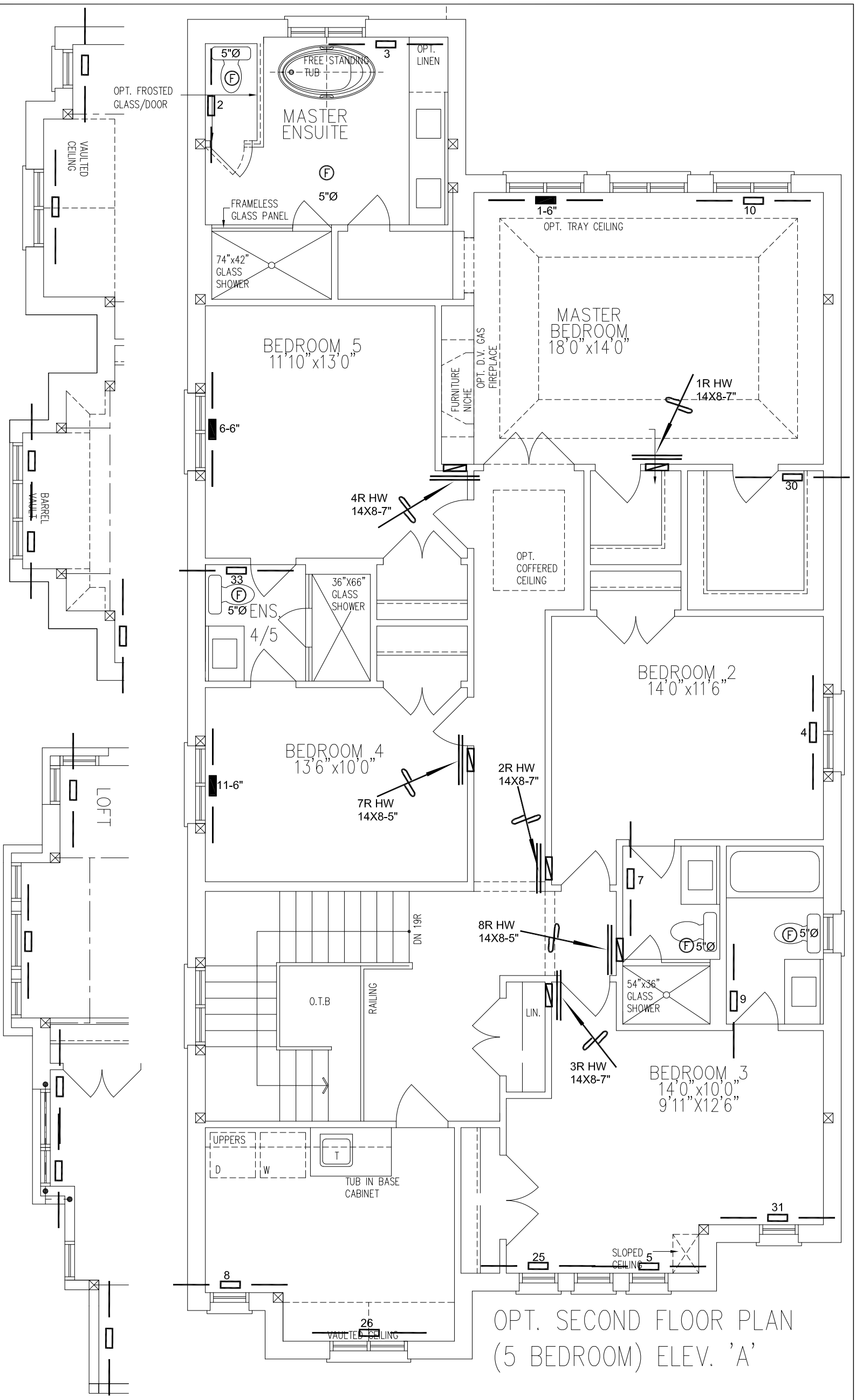
WOB

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.

PARTIAL SECOND FLOOR PLAN – ELEVATION 'B'

PARTIAL SECOND FLOOR PLAN – ELEVATION 'C'



HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT ABOVE		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE

SYMBOL	DESCRIPTION
	RETURN AIR STACK ABOVE
	RETURN AIR STACK 2nd FLOOR
	REDUCER

REVISIONS

No.	Description	Date
1.	ADDED RETURN #8 TO HALL	NOV/2018
2.	REVISED AS PER ARCHITECTURALS	FEB/2020
3.		

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Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT. 5 BED - WOB
ROSEDALE - ALT 1ST
4202 3785 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.

Sheet Title

SECOND FLOOR HEATING LAYOUT

Date OCT/2018

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 80275

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:** 4202- ROSEDALE ALT 1ST - WOB **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.

September 11, 2018
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.

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 | ALT 1ST - WOB | DATE: Sep-18 | WINTER NATURAL AIR CHANGE RATE 0.407 | HEAT LOSS ΔT °F. 76 | CSA-F280-12
BUILDER: GOLD PARK HOMES | TYPE: 4202- ROSEDALE | GFA: 3592 | LO# 79975 | SUMMER NATURAL AIR CHANGE RATE 0.137 | HEAT GAIN ΔT °F. 13 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS			HERS			BED-2			BED-3			BED-4			ENS-2			LOFT			ENS-3			ENS-4		
EXP. WALL			47			34			8			18			36			12			0			39			9			11		
CLG. HT.			10			9			9			9			9			9			9			9			9			9		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	470			306			72			162			324			108			0			351			81			99		
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	18	383	288	0	0	0	0	0	0	0	0	0	0	0	0	9	192	144	0	0	0
EAST	21.3	41.6	0	0	0	0	0	0	0	0	0	0	0	0	53	1128	2202	0	0	0	0	0	0	41	872	1704	0	0	0	0	0	0
SOUTH	21.3	24.9	0	0	0	11	234	274	0	0	0	0	0	0	0	0	0	18	383	448	0	0	0	20	426	498	0	0	0	9	192	224
WEST	21.3	41.6	54	1149	2244	18	383	748	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	101.5	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	0	0	0
DOORS	25.2	4.3	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	0	0	0
NET EXPOSED WALL	4.5	0.8	416	1856	313	277	1236	208	72	321	54	144	643	108	271	1209	204	90	402	68	0	0	0	290	1294	218	72	321	54	90	402	68
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	480	616	282	168	216	99	98	126	58	324	416	190	280	359	165	168	216	99	45	58	26	276	354	162	45	58	26	66	85	39
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	82	38	0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	144	367	62	280	714	120	0	0	0	40	102	17	50	128	21	45	115	19	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			3622			2069			447			1809			3411			1000			160			3156			685			678		
SUB TOTAL HT GAIN				2839			1329			112			648			2691			615			44			2641			244			331	
LEVEL FACTOR / MULTIPLIER			0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32	
AIR CHANGE HEAT LOSS				1161			658			142			575			1084			318			51			1003			218			215	
AIR CHANGE HEAT GAIN					233			109			9			53			221			50			4			217			20			27
DUCT LOSS				0			0			0			238			449			0			21			416			90			0	
DUCT GAIN					0			0			0			154			375			0			5			345			26			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					595			0			0			595			595			595			0			595			0			0
TOTAL HT LOSS BTU/H			4773			2726			589			2622			4944			1318			232			4576			994			893		
TOTAL HT GAIN x 1.3 BTU/H					6391			1869			157			2197			5358			1950			68			4938			377			466

ROOM USE			DIN				KT/GT			LIB			LAUN				FOY			MUD			HIS				WOB			BAS		
EXP. WALL			17				100			12			0				59			26			7				43			159		
CLG. HT.			11				11			11			9				11			12			9				10			10		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	187				1100			132			0				649			312			63				430			1113		
GLAZING			LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN
NORTH	21.3	16.0	0	0	0		10	213	160	23	489	367	0	0	0		0	0	0	0	0	0	0	0	0		26	563	415	0	0	0
EAST	21.3	41.6	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
SOUTH	21.3	24.9	34	724	847		29	617	722	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
WEST	21.3	41.6	0	0	0		123	2617	5111	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0		98	2085	4072	0	0	0
SKYLT.	37.2	101.5	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	4.3	0	0	0		10	252	43	0	0	0	0	0	0		57	1439	242	20	505	85	0	0	0		20	505	85	20	505	85
NET EXPOSED WALL	4.5	0.8	153	683	115		928	4141	697	109	486	82	0	0	0		592	2642	445	292	1303	219	63	281	47		286	1276	215	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	0	0	0		0	0	0	477	1716	289
EXPOSED CLG	1.3	0.6	0	0	0		0	0	0	0	0	0	96	123	56		0	0	0	0	0	0	84	108	49		0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.3	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
EXPOSED FLOOR	2.6	0.4	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	84	214	36		0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0				0			0			0				0			0			0							2560		
SLAB ON GRADE HEAT LOSS			0				0			0			0				0			0			0				552					
SUBTOTAL HT LOSS			1406				7841			976			123				4081			1808			603				4972			4782		
SUB TOTAL HT GAIN				962				6733			449			56				687			305			133					4787			374
LEVEL FACTOR / MULTIPLIER			0.30	0.53			0.30	0.53		0.30	0.53		0.20	0.32			0.30	0.53		0.30	0.53		0.20	0.32						0.50	1.45	
AIR CHANGE HEAT LOSS				739				4121			513			39				2145			950			192							14115		
AIR CHANGE HEAT GAIN					79				552			37			5				56			25			11								423
DUCT LOSS				0				0			0			0				0			0			79							0		
DUCT GAIN					0				0			0			0				0			0			14								0
HEAT GAIN PEOPLE	240		0		0		0		0	0		0	0		0		0		0	0		0	0		0		0		0	0		0	0
HEAT GAIN APPLIANCES/LIGHTS					595				595			595			595				0			595			0				0				595
TOTAL HT LOSS BTU/H			2145				11963			1489			162				6226			2758			874				5523			18897		
TOTAL HT GAIN x 1.3 BTU/H				2126				10244			1406			853				967			1202			205					6224			1811

TOTAL HEAT GAIN BTU/H: 48344 | TONS: 4.03 | LOSS DUE TO VENTILATION LOAD BTU/H: 3181 | STRUCTURAL HEAT LOSS: 73705 | TOTAL COMBINED HEAT LOSS BTU/H: 76886

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Michael O'Rourke

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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

ALT 1ST - WOB
TYPE: 4202- ROSEDALE

DATE: Sep-18

GFA: 3592 LO# 79975

HEATING CFM	1525	COOLING CFM	1525
TOTAL HEAT LOSS	73,705	TOTAL HEAT GAIN	47,808
AIR FLOW RATE CFM	20.69	AIR FLOW RATE CFM	31.9

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

^LENNOX
EL296UH090XE48C 90

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

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

DESIGN CFM = 1525
CFM @ .6" E.S.P.

TEMPERATURE RISE 52 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	17	9	6
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	ENS	BED-2	BED-3	BED-4	ENS-2	LOFT	ENS-3	MBR	ENS-4	DIN	KT/GT	KT/GT	KT/GT	KT/GT	LAUN	LIB	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.39	1.36	1.36	2.62	1.65	1.32	0.23	2.29	0.99	2.39	0.89	2.15	2.99	2.99	2.99	2.99	0.16	1.49	3.11	2.76	4.07	4.07	4.07	4.07
CFM PER RUN HEAT	49	28	28	54	34	27	5	47	21	49	18	44	62	62	62	62	3	31	64	57	84	84	84	84
RM GAIN MBH.	2.70	0.93	0.93	2.20	1.79	1.95	0.07	2.47	0.38	2.70	0.46	2.13	2.56	2.56	2.56	2.56	0.85	1.41	0.48	1.20	1.34	1.34	1.34	1.34
CFM PER RUN COOLING	86	30	30	70	57	62	2	79	12	86	15	68	82	82	82	82	27	45	15	38	43	43	43	43
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	69	53	61	39	49	25	42	55	48	73	39	10	43	47	46	57	52	36	42	27	45	65	13	36
EQUIVALENT LENGTH	160	150	130	180	150	140	190	190	160	140	140	150	130	130	130	130	190	120	150	160	150	120	120	130
TOTAL EFFECTIVE LENGTH	229	203	191	219	199	165	232	245	208	213	179	160	173	177	176	187	242	156	192	187	195	185	133	166
ADJUSTED PRESSURE	0.07	0.08	0.09	0.08	0.09	0.1	0.07	0.07	0.08	0.08	0.1	0.11	0.09	0.09	0.09	0.09	0.07	0.11	0.09	0.09	0.08	0.09	0.12	0.1
ROUND DUCT SIZE	6	4	4	5	5	5	4	6	4	6	4	5	5	5	5	5	4	4	5	5	6	6	5	5
HEATING VELOCITY (ft/min)	250	321	321	396	250	198	57	240	241	250	207	323	455	455	455	455	34	356	470	419	428	428	617	617
COOLING VELOCITY (ft/min)	438	344	344	514	419	455	23	403	138	438	172	499	602	602	602	602	310	516	110	279	219	219	316	316
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10
TRUNK	B	A	A	C	E	C	E	D	E	B	C	C	A	A	B	B	B	C	D	E	A	B	C	D

RUN #	25	26	27	28	29	30	31	32
ROOM NAME	BED-3	LOFT	BAS	FOY	HERS	HIS	BED-3	BAS
RM LOSS MBH.	1.65	2.29	4.07	3.11	0.59	0.87	1.65	4.07
CFM PER RUN HEAT	34	47	84	64	12	18	34	84
RM GAIN MBH.	1.79	2.47	1.34	0.48	0.16	0.21	1.79	1.34
CFM PER RUN COOLING	57	79	43	15	5	7	57	43
ADJUSTED PRESSURE	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.16
ACTUAL DUCT LGH.	45	57	33	40	50	60	58	22
EQUIVALENT LENGTH	140	150	180	150	180	150	160	120
TOTAL EFFECTIVE LENGTH	185	207	213	190	230	210	218	142
ADJUSTED PRESSURE	0.09	0.08	0.08	0.09	0.07	0.08	0.08	0.11
ROUND DUCT SIZE	5	5	6	5	4	4	5	5
HEATING VELOCITY (ft/min)	250	345	428	470	138	207	250	617
COOLING VELOCITY (ft/min)	419	580	219	110	57	80	419	316
OUTLET GRILL SIZE	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10
TRUNK	E	D	D	D	B	B	E	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	264	0.08	8.5	8	x	8	594	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	339	0.07	9.7	12	x	8	509	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	945	0.07	14.2	24	x	8	709	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	390	0.07	10.2	12	x	8	585	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	575	0.07	11.8	16	x	8	647	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1525	0.06	17.7	32	x	10	686
TRUNK Y	460	0.06	11.3	14	x	8	591
TRUNK Z	930	0.06	14.7	26	x	8	644
DROP	1525	0.06	17.7	24	x	14	654

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	130	125	130	130	340	330	130	0	0	0	0	0	0	0	0	210
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.	62	69	49	53	30	52	56	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	155	165	145	185	185	140	150	0	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	217	234	194	238	215	192	206	1	1	1	1	1	1	1	1	159
ADJUSTED PRESSURE	0.07	0.06	0.08	0.06	0.07	0.08	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6.8	6.9	6.5	7	9.7	9.3	6.8	0	0	0	0	0	0	0	0	7.6
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	30	30	14	0	0	0	0	0	0	0	0	24

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Michael O'Rourke. INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

HVAC DESIGNS LTD.

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

TYPE: 4202- ROSEDALE LO # 79975
SITE NAME: PINE VALLEY & TESTON ALT 1ST - WOB

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	8	@ 10.6 cfm	84.8	cfm
Table 9.32.3.A.		TOTAL	222.6	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	222.6	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	67.6	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: September-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

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 79975 Model: 4202- ROSEDALE Builder: GOLD PARK HOMES Date: 9/11/2018

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1540	10	15400
First	1540	11	16940
Second	2076	9	18684
Third	0	9	0
Fourth	0	9	0
		Total:	51,024.0 ft³
		Total:	1444.8 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.407
SUMMER NATURAL AIR CHANGE RATE	0.137

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

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

0.407 x 401.34 x 42 °C x 1.2 = 8274 W

= 28230 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

= 0.137 x 401.34 x 7 °C x 1.2 = 468 W

= 1595 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 13 °F x 1.08 x 0.25 = 536 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	28,230	9,753	1.447
2	0.3		16,113	0.526
3	0.2		17,763	0.318
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: 4202- ROSEDALE ALT 1ST - WOB **BUILDER:** GOLD PARK HOMES
SFQT: 3592 **LO#** 79975 **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)	75

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):	51024.0	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: 68.0 ft WIDTH:	33.0 ft	EXPOSED PERIMETER:	159.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	43.0 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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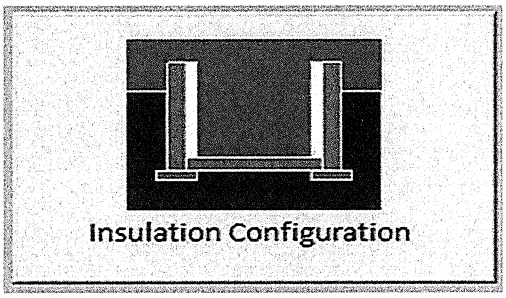
Residential Foundation Thermal Load Calculator

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):	**4.6**	 Insulation Configuration
Floor Width (m):	**10.1**	
Exposed Perimeter (m):	**48.5**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**1.79**	
Window Area (m^2):	**0.0**	
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):		**750**

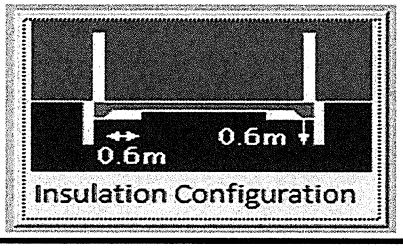
TYPE: 4202- ROSEDALE ALT 1ST - WOB

LO# 79975

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		
Length (m):	**1.5**	
Width (m):	**10.1**	
Exposed Perimeter (m):	**13.1**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Results		
Heating Load (Watts):	**162**	

TYPE: 4202- ROSEDALE ALT 1ST - WOB
LO# 79975

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):	9.14
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	1444.8
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 1926.0 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):	**0.407**
Cooling Air Leakage Rate (ACH/H):	**0.137**

TYPE: 4202- ROSEDALE ALT 1ST - WOB

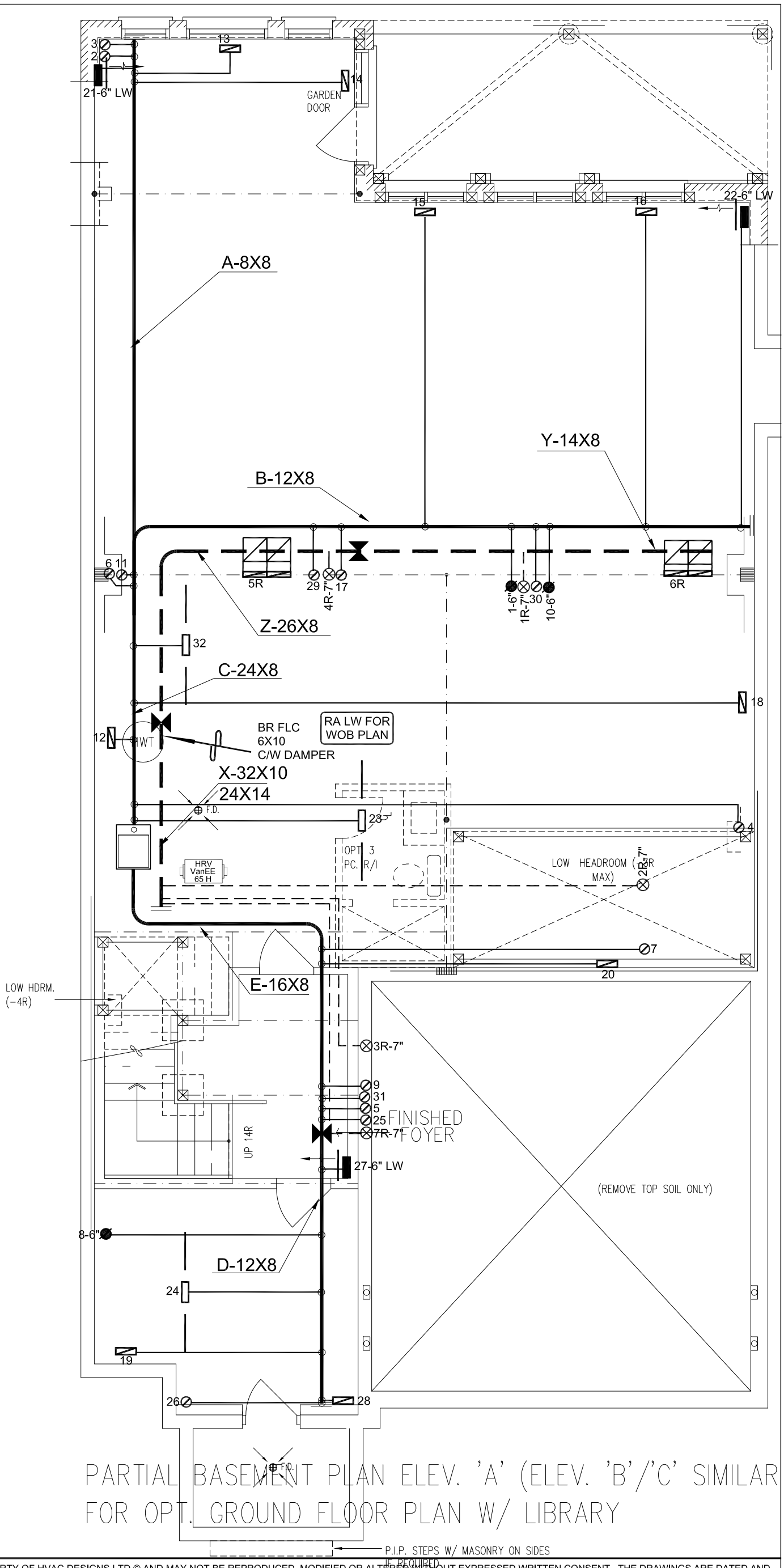
LO# 79975

CSA-F280-12 **WOB**

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.



PARTIAL BASEMENT PLAN ELEV. 'A' (ELEV. 'B'/'C' SIMILAR FOR OPT. GROUND FLOOR PLAN W/ LIBRARY

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		SUPPLY AIR GRILLE		SUPPLY AIR GRILLE 6" BOOT
	6" SUPPLY AIR BOOT ABOVE		SUPPLY AIR STACK FROM 2nd FLOOR		6" SUPPLY AIR STACK 2nd FLOOR
	14"x8" RETURN AIR GRILLE		30"x8" RETURN AIR GRILLE		FRA- FLOOR RETURN AIR GRILLE
	RETURN AIR STACK ABOVE		RETURN AIR STACK 2nd FLOOR		REDUCER

REVISIONS

No.	Description	Date
1.	DECK CONDITIONS ADDED	SEPT/2018
2.	REVISED AS PER ARCHITECTURALS	FEB/2020
3.		

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO
ALT. 1ST
ROSEDALE
4202 - WOB 3592 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services

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

HEAT LOSS 76886 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	EL296UH090XE48C
INPUT	88 MBTU/H
OUTPUT	85 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1525 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	17	5	6
1ST FLOOR	9	2	2
BASEMENT	6	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

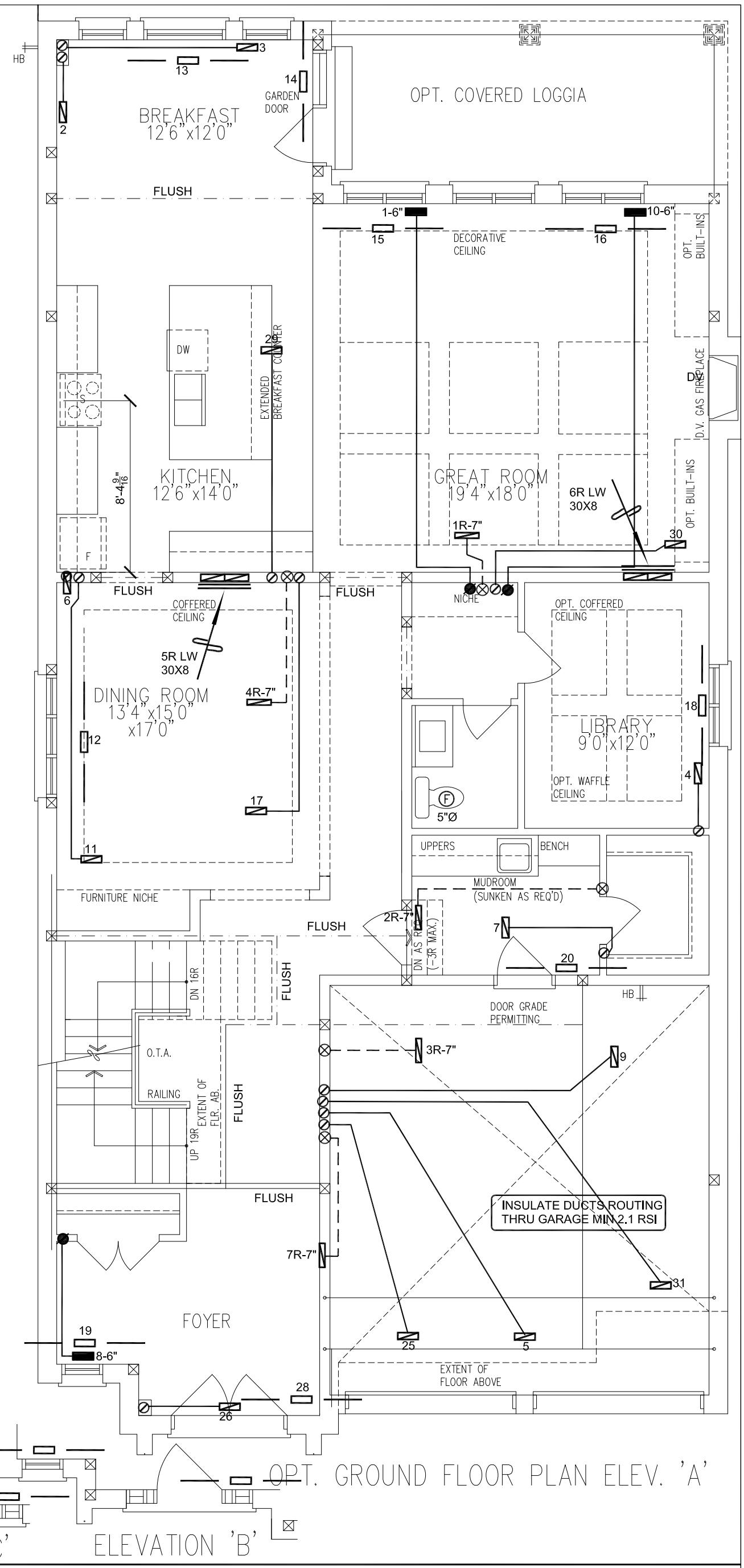
Date SEPT/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 79975

CSA-F280-12 WOB

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
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR
	SUPPLY AIR GRILLE		SUPPLY AIR STACK FROM 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
			30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
					REDUCER

REVISIONS			
No.	Description	Date	
1.	DECK CONDITIONS ADDED	SEPT/2018	
2.	REVISED AS PER ARCHITECTURALS	FEB/2020	
3.			

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO
ALT. 1ST
ROSEDALE
4202 - WOB 3592 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 SEPT/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 79975

CSA-F280-12 WOB

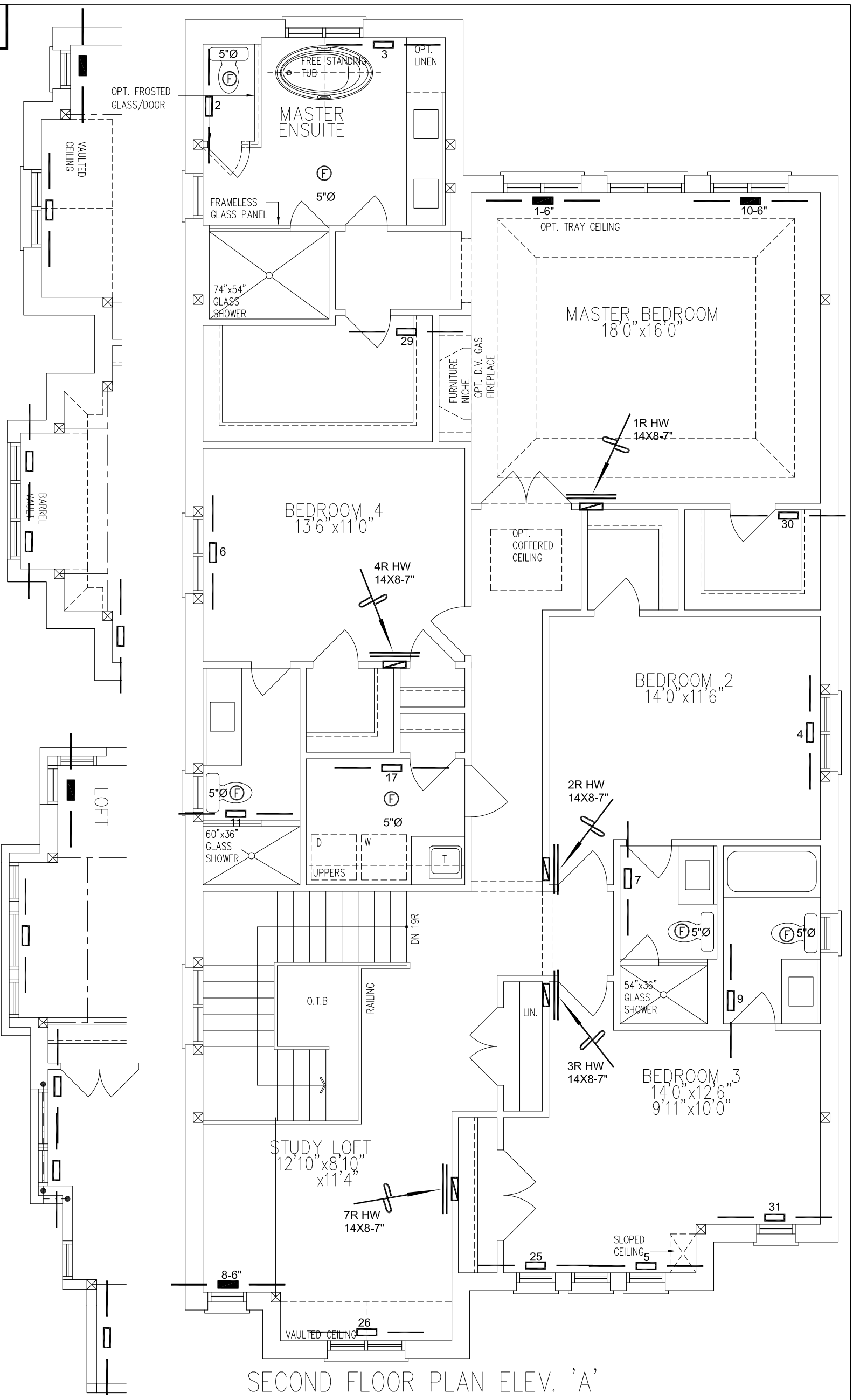
PACKAGE A1

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.

PARTIAL SECOND FLOOR PLAN – ELEVATION 'B'

PARTIAL SECOND FLOOR PLAN – ELEVATION 'C'



SECOND FLOOR PLAN ELEV. 'A'

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE
	SUPPLY AIR BOOT ABOVE				

SYMBOL	DESCRIPTION
	RETURN AIR STACK ABOVE
	RETURN AIR STACK 2nd FLOOR
	REDUCER

REVISIONS

No.	Description	Date
1.	DECK CONDITIONS ADDED	SEPT/2018
2.	REVISED AS PER ARCHITECTURALS	FEB/2020
3.		

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO
ALT. 1ST
ROSEDALE
4202 - WOB 3592 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
SECOND FLOOR HEATING LAYOUT

Date SEPT/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 79975

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:** 4202- ROSEDALE **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.

September 10, 2018
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.

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: Sep-18 — WINTER NATURAL AIR CHANGE RATE 0.340 — HEAT LOSS ΔT °F. 76 — CSA-F280-12
BUILDER: GOLD PARK HOMES — TYPE: 4202- ROSEDALE — GFA: 3592 — LO# 77465 — SUMMER NATURAL AIR CHANGE RATE 0.124 — HEAT GAIN ΔT °F. 16 — SB-12 PACKAGE A1

ROOM USE			MBR			ENS			HERS			BED-2			BED-3			BED-4			ENS-2			LOFT			ENS-3			ENS-4				
EXP. WALL			47			34			7			18			36			12			0			38			9			11				
CLG. HT.			10			9			9			9			9			9			9			9			9			9				
	FACTORS																																
GRS.WALL AREA	LOSS	GAIN	470			306			63			162			324			108			0			342			81			99				
GLAZING			LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN		
NORTH	21.3	16.8	0	0	0	0	0	0	0	0	0	18	383	303	0	0	0	0	0	0	0	0	0	0	0	0	9	192	151	0	0	0		
EAST	21.3	42.4	0	0	0	0	0	0	0	0	0	0	0	0	53	1128	2247	0	0	0	0	0	0	41	872	1738	0	0	0	0	0	0		
SOUTH	21.3	25.7	0	0	0	11	234	283	0	0	0	0	0	0	0	0	0	18	383	463	0	0	0	20	426	515	0	0	0	9	192	232		
WEST	21.3	42.4	54	1149	2289	18	383	763	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	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	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	0	0	0		
NET EXPOSED WALL	4.5	0.9	416	1856	386	277	1236	257	63	281	58	144	643	134	271	1209	251	90	402	83	0	0	0	281	1264	261	72	321	67	90	402	83		
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	480	616	306	168	216	107	98	126	63	324	416	207	280	359	179	168	216	107	45	58	29	276	354	176	45	58	29	66	85	42		
NO ATTIC EXPOSED CLG	2.7	1.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	82	41	0	0	0	0	0	0		
EXPOSED FLOOR	2.6	0.5	0	0	0	0	0	0	0	0	0	144	367	76	280	714	148	0	0	0	40	102	21	50	128	27	45	115	24	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			3622			2069			407			1809			3411			1000			160			3116			685			678				
SUB TOTAL HT GAIN					2982			1410			121			719			2825			654			50			2757			271			357	
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			969			553			109			484			912			268			43			833			183			181				
AIR CHANGE HEAT GAIN					317			150			13			76			300			69			5			293			29			38	
DUCT LOSS			0			0			0			229			432			0			20			395			87			0				
DUCT GAIN					0			0			0			191			424			0			6			393			30			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					877			0			0			877			877			877			0			877			0			0	
TOTAL HT LOSS BTU/H			4590			2622			516			2522			4755			1268			223			4345			956			859				
TOTAL HT GAIN x 1.3 BTU/H					6051			2028			174			2735			6066			2392			79			5615			428			514	

ROOM USE			DIN				KT/GT				LAUN			PWD			FOY			MUD			HIS				LOD			BAS		
EXP. WALL			17				100				0			15			59			15			6				43			202		
CLG. HT.			11				11				9			12			11			12			9				10			10		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	187				1100				0			180			649			180			54				430			1672		
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		10	213	168		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EAST	21.3	42.4	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
SOUTH	21.3	25.7	34	724	875		29	617	746		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST	21.3	42.4	0	0	0		123	2617	5214		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	426	848	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	0
DOORS	25.2	5.2	0	0	0		10	252	52		0	0	0	0	0	0	57	1439	299	20	505	105	0	0	0	0	0	0	20	505	105	
NET EXPOSED WALL	4.5	0.9	153	683	142		928	4141	861		0	0	0	180	803	167	592	2642	549	160	714	148	54	241	50		0	0	0	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		238	856	178	348	1252	260
EXPOSED CLG	1.3	0.6	0	0	0		0	0	0		96	123	61	0	0	0	0	0	0	0	0	0	84	108	54		0	0	0	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	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	84	214	45		0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0				0				0			0			0			0			0							6921		
SLAB ON GRADE HEAT LOSS			0				0				0			0			0			0			0				0					
SUBTOTAL HT LOSS			1406				7841				123			803			4081			1219			563				1282			8678		
SUB TOTAL HT GAIN					1017				7042				61			167			848			253			148			1026			365	
LEVEL FACTOR / MULTIPLIER			0.30	0.46			0.30	0.46			0.20	0.27		0.30	0.46		0.30	0.46		0.30	0.46		0.20	0.27						0.50	1.18		
AIR CHANGE HEAT LOSS			648				3615				33			370			1882			562			151							11797		
AIR CHANGE HEAT GAIN					108				748				7			18			90			27			16						148	
DUCT LOSS			0				0				0			0			0			0			71							0		
DUCT GAIN					0				0				0			0			0			0			16						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					877				877				877			0			0			877			0				0			877
TOTAL HT LOSS BTU/H			2055				11457				156			1174			5963			1781			785				1282			20475		
TOTAL HT GAIN x 1.3 BTU/H					2602				11266				1228			240			1220			1504			235				1334			1806

TOTAL HEAT GAIN BTU/H: 48178 — TONS: 4.01 — LOSS DUE TO VENTILATION LOAD BTU/H: 3181 — STRUCTURAL HEAT LOSS: 67782 — TOTAL COMBINED HEAT LOSS BTU/H: 70963

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INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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

TYPE: 4202- ROSEDALE | DATE: Sep-18 | GFA: 3592 | LO# 77465

HEATING CFM	1525	COOLING CFM	1525	furnace pressure	0.6																			
TOTAL HEAT LOSS	67,782	TOTAL HEAT GAIN	47,516	furnace filter	0.05																			
AIR FLOW RATE CFM	22.5	AIR FLOW RATE CFM	32.09	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 = 1525 CFM @ .6 " E.S.P.
TEMPERATURE RISE 52 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	17	9	6
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	ENS	BED-2	BED-3	BED-4	ENS-2	LOFT	ENS-3	MBR	ENS-4	DIN	KT/GT	KT/GT	KT/GT	KT/GT	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.30	1.31	1.31	2.52	1.59	1.27	0.22	2.17	0.96	2.30	0.86	2.05	2.86	2.86	2.86	2.86	0.16	1.17	2.98	1.78	3.63	3.63	3.63	3.63
CFM PER RUN HEAT	52	30	30	57	36	29	5	49	21	52	19	46	64	64	64	64	4	26	67	40	82	82	82	82
RM GAIN MBH.	3.03	1.01	1.01	2.73	2.02	2.39	0.08	2.81	0.43	3.03	0.51	2.60	2.82	2.82	2.82	2.82	1.23	0.24	0.61	1.50	0.52	0.52	0.52	0.52
CFM PER RUN COOLING	97	33	33	88	65	77	3	90	14	97	16	84	90	90	90	90	39	8	20	48	17	17	17	17
ADJUSTED PRESSURE	0.16	0.17	0.17	0.16	0.17	0.17	0.17	0.16	0.17	0.16	0.17	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	69	53	61	60	49	25	48	55	48	73	39	10	43	47	46	57	52	22	42	24	45	50	13	36
EQUIVALENT LENGTH	160	150	130	190	150	140	190	190	160	140	140	150	130	130	130	130	190	160	150	110	120	110	120	130
TOTAL EFFECTIVE LENGTH	229	203	191	250	199	165	238	245	208	213	179	160	173	177	176	187	242	182	192	134	165	160	133	166
ADJUSTED PRESSURE	0.07	0.08	0.09	0.06	0.09	0.1	0.07	0.07	0.08	0.08	0.1	0.1	0.09	0.09	0.09	0.09	0.07	0.09	0.09	0.13	0.1	0.1	0.12	0.1
ROUND DUCT SIZE	**6**	4	4	**6**	5	5	4	**6**	4	**6**	4	5	**6**	**6**	**6**	**6**	4	4	5	4	5	5	5	5
HEATING VELOCITY (ft/min)	265	344	344	291	264	213	57	250	241	265	218	338	326	326	326	326	46	298	492	459	602	602	602	602
COOLING VELOCITY (ft/min)	495	379	379	449	477	565	34	459	161	495	184	617	459	459	459	459	447	92	147	551	125	125	125	125
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	B	A	A	E	E	C	E	D	E	B	C	C	A	A	B	B	B	E	D	C	A	B	C	D

RUN #	25	26	27	28	29	30	31	32
ROOM NAME	BED-3	LOFT	BAS	FOY	HERS	HIS	BED-3	BAS
RM LOSS MBH.	1.59	2.17	3.63	2.98	0.52	0.78	1.59	3.63
CFM PER RUN HEAT	36	49	82	67	12	18	36	82
RM GAIN MBH.	2.02	2.81	0.52	0.61	0.17	0.23	2.02	0.52
CFM PER RUN COOLING	65	90	17	20	6	8	65	17
ADJUSTED PRESSURE	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.16
ACTUAL DUCT LGH.	45	57	33	40	50	60	58	22
EQUIVALENT LENGTH	140	150	180	150	180	150	160	120
TOTAL EFFECTIVE LENGTH	185	207	213	190	230	210	218	142
ADJUSTED PRESSURE	0.09	0.08	0.08	0.09	0.07	0.08	0.08	0.11
ROUND DUCT SIZE	5	**6**	5	5	4	4	5	5
HEATING VELOCITY (ft/min)	264	250	602	492	138	207	264	602
COOLING VELOCITY (ft/min)	477	459	125	147	69	92	477	125
OUTLET GRILL SIZE	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	E	D	D	D	B	B	E	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	270	0.08	8.6	8	x	8	608	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	348	0.07	9.8	12	x	8	522	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	916	0.07	14	22	x	8	749	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	396	0.07	10.2	12	x	8	594	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	613	0.06	12.5	18	x	8	613	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1525	0.06	17.7	32	x	10	686
TRUNK Y	430	0.06	11	14	x	8	553
TRUNK Z	925	0.06	14.6	24	x	8	694
DROP	1525	0.06	17.7	24	x	14	654

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	130	125	130	130	365	300	130	0	0	0	0	0	0	0	0	215
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.	62	69	49	53	30	52	56	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	155	165	145	185	185	140	150	0	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	217	234	194	238	215	192	206	1	1	1	1	1	1	1	1	159
ADJUSTED PRESSURE	0.07	0.06	0.08	0.06	0.07	0.08	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6.8	6.9	6.5	7	9.9	8.9	6.8	0	0	0	0	0	0	0	0	7.7
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	30	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.

Michael O'Rourke. INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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TYPE: 4202- ROSEDALE LO # 77465
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	6	@ 10.6 cfm	63.6	cfm
Other Rooms	8	@ 10.6 cfm	84.8	cfm
Table 9.32.3.A.		TOTAL	222.6	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	222.6	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	67.6	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: September-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

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 77465 Model: 4202- ROSEDALE Builder: GOLD PARK HOMES Date: 9/10/2018

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1540	10	15400
First	1540	11	16940
Second	2076	9	18684
Third	0	9	0
Fourth	0	9	0
		Total:	51,024.0 ft³
		Total:	1444.8 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 401.34 x 42 °C x 1.2 = 6915 W

= 23594 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

= 0.124 x 401.34 x 9 °C x 1.2 = 524 W

= 1789 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	23,594	9,960	1.184
2	0.3		15,351	0.461
3	0.2		17,643	0.267
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: 4202- ROSEDALE **BUILDER:** GOLD PARK HOMES
SFQT: 3592 **LO#** 77465 **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):	51024.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.70	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 68.0 ft	WIDTH: 33.0 ft	EXPOSED PERIMETER:	202.0 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

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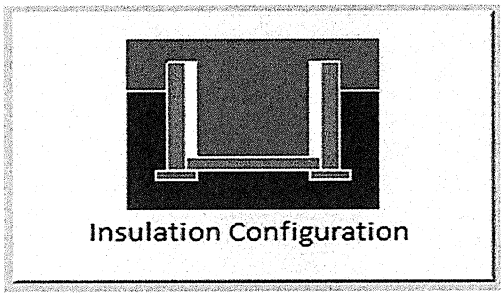
Residential Foundation Thermal Load Calculator

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):	**20.7**	 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):	**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):		**2028**

TYPE: 4202- ROSEDALE
LO# 77465

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

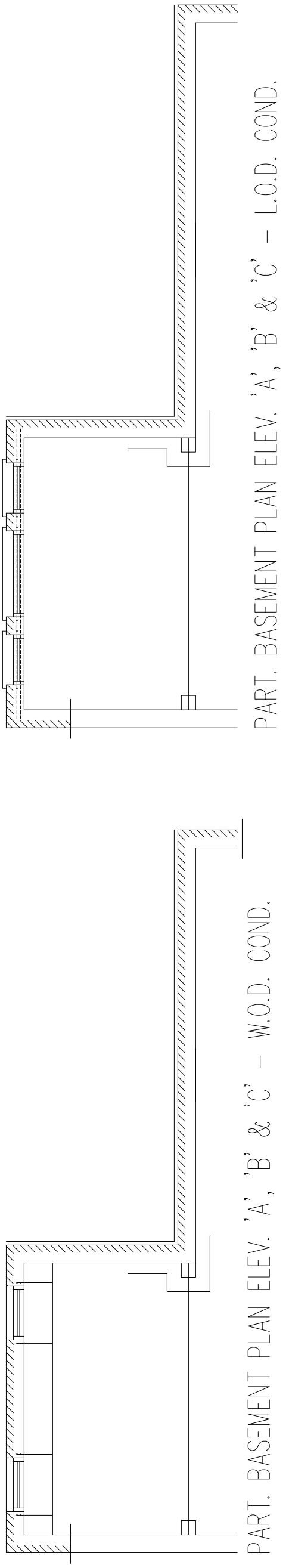
Weather Station Description	
Province:	Ontario
Region:	Vaughan (Woodbridge)
Weather Station Location:	Open flat terrain, grass
Anemometer height (m):	10
Local Shielding	
Building Site:	Suburban, forest
Walls:	Heavy
Flue:	Heavy
Highest Ceiling Height (m):	7.01
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	1444.8
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 1926.0 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**

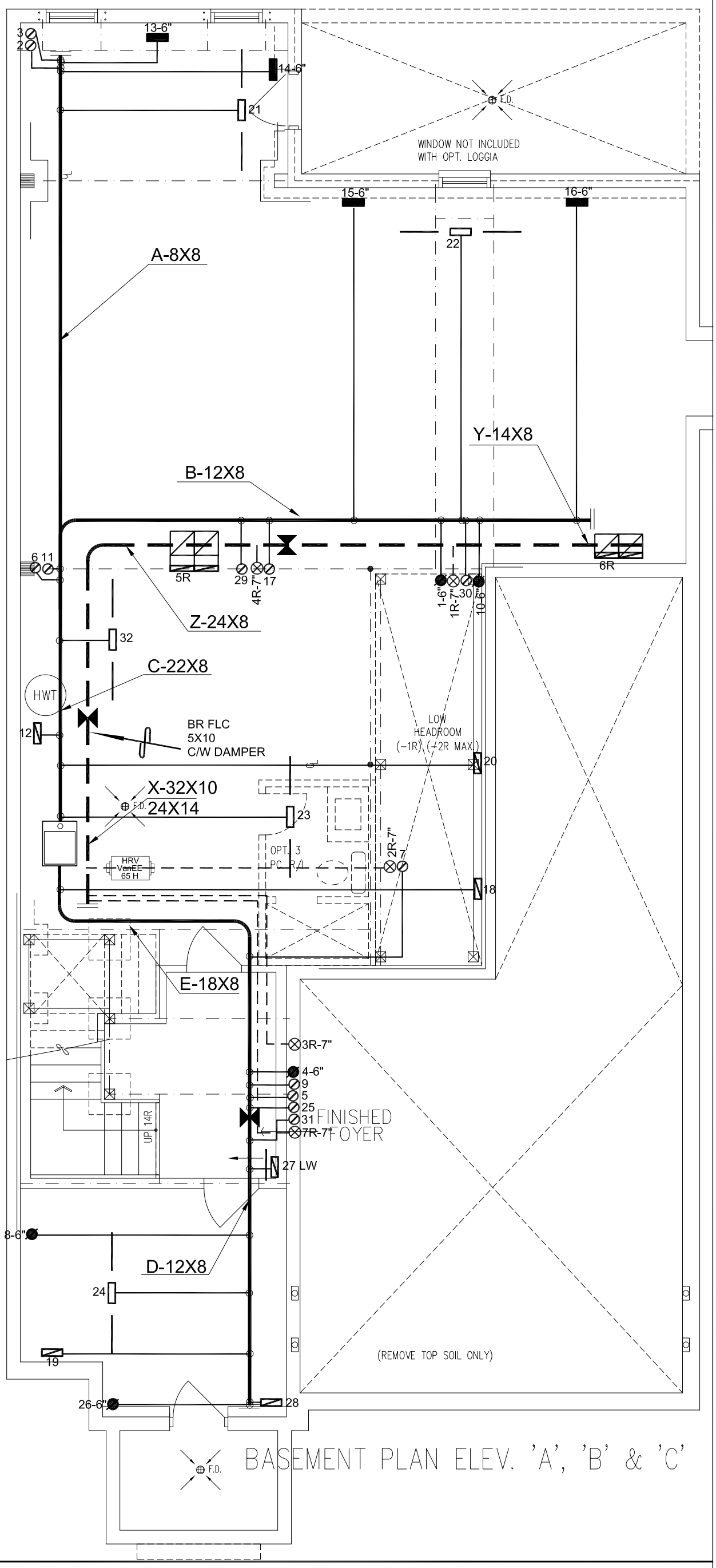
TYPE: 4202- ROSEDALE
LO# 77465

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
	SUPPLY AIR GRILLE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		FRA- FLOOR RETURN AIR GRILLE		REDUCER
	6" SUPPLY AIR BOOT ABOVE				
	SUPPLY AIR STACK FROM 2nd FLOOR				
	6" SUPPLY AIR STACK 2nd FLOOR				

No.	Description	Date
1.	REVISED AS PER CAD	JULY/2018
2.	DECK CONDITIONS ADDED	SEPT/2018
3.	REVISED AS PER ARCHITECTURALS	FEB/2020

REVISIONS

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO

ROSEDALE
4202 3592 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services

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

HEAT LOSS 70963 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	EL296UH090XE48C
INPUT	88 MBTU/H
OUTPUT	85 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1525 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	17	5	6
1ST FLOOR	9	2	2
BASEMENT	6	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

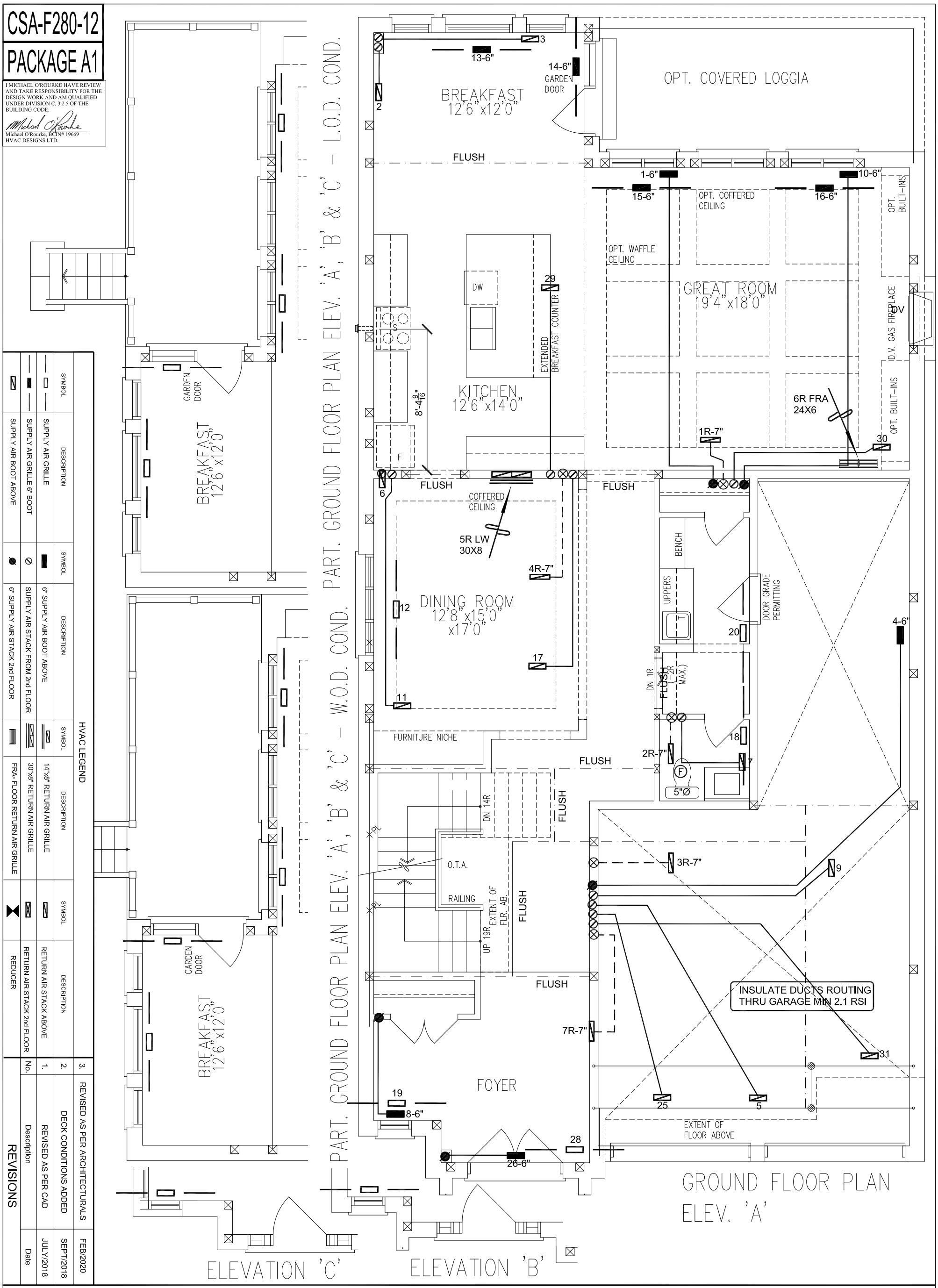
Sheet Title
BASEMENT HEATING LAYOUT

Date JAN/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 77465

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
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE
	SUPPLY AIR BOOT ABOVE				

SYMBOL	DESCRIPTION
	RETURN AIR STACK ABOVE
	RETURN AIR STACK 2nd FLOOR
	REDUCER

REVISIONS

No.	Description	Date
1.	REVISED AS PER CAD	JULY/2018
2.	DECK CONDITIONS ADDED	SEPT/2018
3.	REVISED AS PER ARCHITECTURALS	FEB/2020

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO

ROSEDALE
4202 3592 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 JAN/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 77465

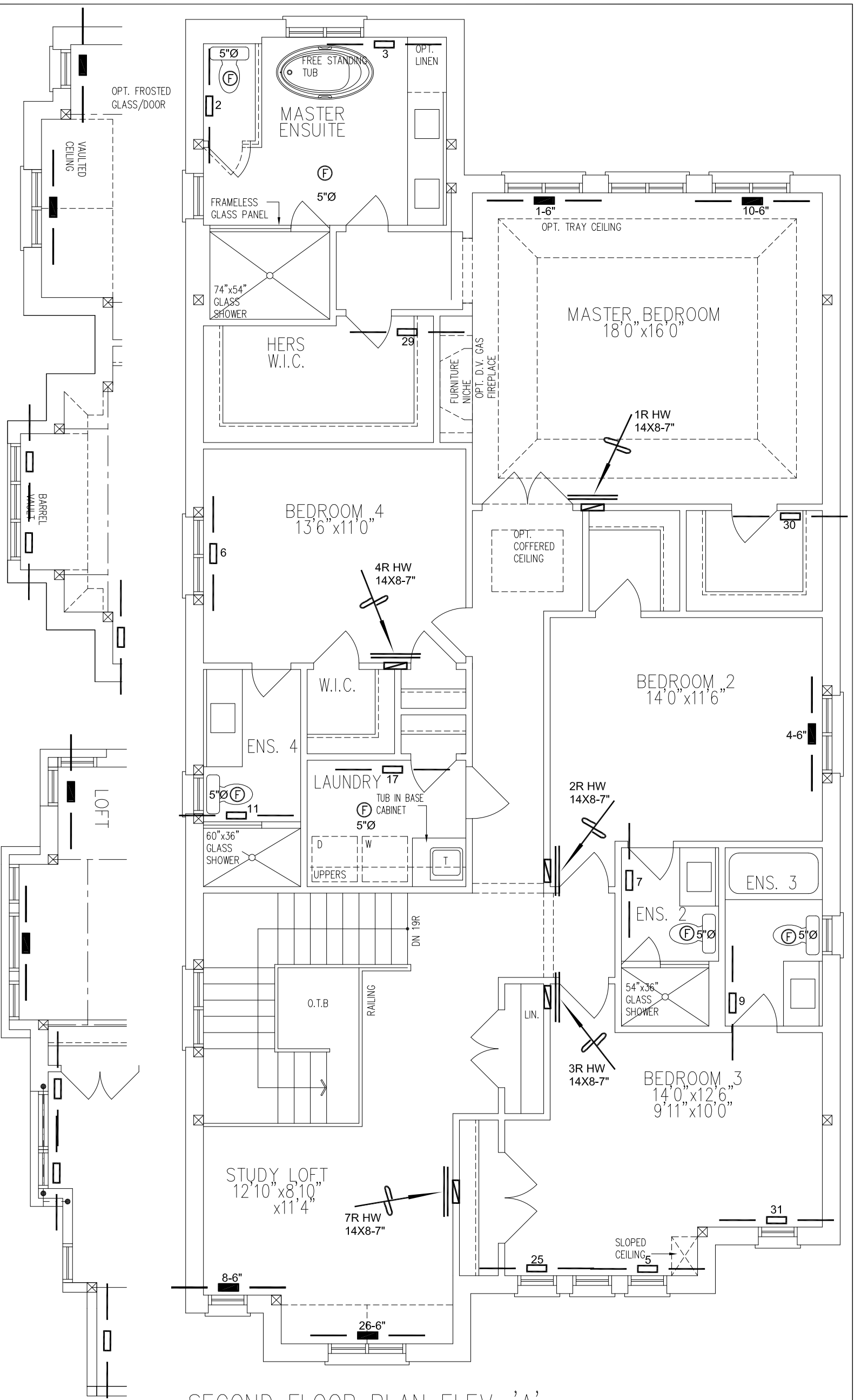
CSA-F280-12
PACKAGE A1

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.

PARTIAL SECOND FLOOR PLAN – ELEVATION 'B'

PARTIAL SECOND FLOOR PLAN – ELEVATION 'C'



SECOND FLOOR PLAN ELEV. 'A'

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE
	SUPPLY AIR BOOT ABOVE		RETURN AIR STACK ABOVE		RETURN AIR STACK 2nd FLOOR
					REDUCER

REVISIONS

No.	Description	Date
1.	REVISED AS PER CAD	JULY/2018
2.	DECK CONDITIONS ADDED	SEPT/2018
3.	REVISED AS PER ARCHITECTURALS	FEB/2020

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO

ROSEDALE
4202 3592 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
SECOND FLOOR HEATING LAYOUT

Date JAN/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 77465

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:** 4202- ROSEDALE OPT. 5 BED **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.

September 10, 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.

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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 & TESTON | OPT. 5 BED | DATE: Nov-18 | WINTER NATURAL AIR CHANGE RATE 0.340 | HEAT LOSS ΔT °F. 76 | CSA-F280-12

BUILDER: GOLD PARK HOMES | TYPE: 4202- ROSEDALE | GFA: 3592 | LO# 77466 | SUMMER NATURAL AIR CHANGE RATE 0.124 | HEAT GAIN ΔT °F. 16 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			ENS-2			BED-5			ENS-3			ENS-4/5				
EXP. WALL			34			37				12			36			16			0			13			9			6				
CLG. HT.			10			9				9			9			9			9			9			9			9				
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	340			333				108			324			144			0			117			81			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		18	383	303	0	0	0	0	0	0	0	0	0	0	0	0	9	192	151	0	0	0		
EAST	21.3	42.4	0	0	0	0	0	0		0	0	0	53	1128	2247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SOUTH	21.3	25.7	0	0	0	0	0	0		0	0	0	0	0	0	38	809	978	0	0	0	18	383	463	0	0	0	0	0	0		
WEST	21.3	42.4	54	1149	2289	18	383	763		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	286	1276	265	315	1406	292		90	402	83	271	1209	251	106	473	98	0	0	0	99	442	92	72	321	67	54	241	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		
EXPOSED CLG	1.3	0.6	285	366	182	210	270	134		228	293	146	280	359	179	240	308	153	104	133	66	182	234	116	45	58	29	84	108	54		
NO ATTIC EXPOSED CLG	2.7	1.4	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		
EXPOSED FLOOR	2.6	0.5	0	0	0	0	0	0		144	367	76	280	714	148	0	0	0	104	265	55	0	0	0	45	115	24	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				2791			2058				1445			3411			1590			399			1058			685			349			
SUB TOTAL HT GAIN					2736			1189				608			2825			1230			122			671			271			104		
LEVEL FACTOR / MULTIPLIER			0.20	0.28		0.20	0.28			0.20	0.28		0.20	0.28		0.20	0.28		0.20	0.28		0.20	0.28		0.20	0.28		0.20	0.28			
AIR CHANGE HEAT LOSS				779			575				403			952			444			111			295			191			97			
AIR CHANGE HEAT GAIN					293			127				65			303			132			13			72			29			11		
DUCT LOSS				0			0				185			436			0			51			0			88			0			
DUCT GAIN					0			0				186			431			0			13			0			30			0		
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	1		240	0		0	0		0		
HEAT GAIN APPLIANCES/LIGHTS					945			0				945			945			945			0			945			0			0		
TOTAL HT LOSS BTU/H				3570			2633				2033			4799			2033			561			1354			964			446			
TOTAL HT GAIN x 1.3 BTU/H					5791			1712				2658			6168			3311			192			2507			429			149		

ROOM USE			DIN			KT/GT				LAUN			PWD			FOY			MUD			WIC				LOD			BAS		
EXP. WALL			17			100				32			15			59			15			6				43			202		
CLG. HT.			11			11				9			12			11			12			9				10			10		
	FACTORS																														
GRS.WALL AREA	LOSS	GAIN	187			1100				288			180			649			180			54				430			1672		
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	10	213	168		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
EAST	21.3	42.4	0	0	0	0	0	0		41	872	1738	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
SOUTH	21.3	25.7	34	724	875	29	617	746		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
WEST	21.3	42.4	0	0	0	123	2617	5214		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		20	426	848	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	10	252	52		0	0	0	0	0	0	57	1439	299	20	505	105	0	0	0		0	0	0	20	505	105
NET EXPOSED WALL	4.5	0.9	153	683	142	928	4141	861		247	1102	229	180	803	167	592	2642	549	160	714	148	54	241	50		0	0	0	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		238	856	178	348	1252	260
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0		388	498	248	0	0	0	0	0	0	0	0	0	84	108	54		0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.4	0	0	0	0	0	0		30	82	41	0	0	0	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		0	0	0	0	0	0	0	0	0	0	0	0	84	214	45		0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0				0			0			0			0			0						6921		
SLAB ON GRADE HEAT LOSS				0			0				0			0			0			0			0				0				
SUBTOTAL HT LOSS				1406			7841				2555			803			4081			1219			563				1282			8678		
SUB TOTAL HT GAIN					1017			7042				2256			167			848			253			148					1026			365
LEVEL FACTOR / MULTIPLIER			0.30	0.46		0.30	0.46			0.20	0.28		0.30	0.46		0.30	0.46		0.30	0.46		0.20	0.28						0.50	1.18		
AIR CHANGE HEAT LOSS				648			3615				713			370			1882			562			157						11797		
AIR CHANGE HEAT GAIN					109			754				242			18			91			27			16								149
DUCT LOSS				0			0				0			0			0			0			72						0		
DUCT GAIN					0			0				0			0			0			0			16								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					945			945				945			0			0			0			0				0				945
TOTAL HT LOSS BTU/H				2055			11457				3268			1174			5963			1781			792				1282			20475		
TOTAL HT GAIN x 1.3 BTU/H					2693			11364				4476			240			1221			365			235					1334			1897

TOTAL HEAT GAIN BTU/H: 47402 TONS: 3.95 LOSS DUE TO VENTILATION LOAD BTU/H: 3181 STRUCTURAL HEAT LOSS: 66640 TOTAL COMBINED HEAT LOSS BTU/H: 69821

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

SITE NAME: PINE VALLEY & TESTON — OPT. 5 BED
BUILDER: GOLD PARK HOMES — TYPE: 4202- ROSEDALE — DATE: Nov-18 — GFA: 3592 — LO# 77466

HEATING CFM	1525	COOLING CFM	1525	furnace pressure	0.6								^LENNOX		AFUE =	96 %
TOTAL HEAT LOSS	66,640	TOTAL HEAT GAIN	46,740	furnace filter	0.05								EL296UH090XE48C	90	INPUT (BTU/H) =	88,000
AIR FLOW RATE CFM	22.88	AIR FLOW RATE CFM	32.63	a/c coil pressure	0.2								FAN SPEED		OUTPUT (BTU/H) =	**85,000**
				available pressure for s/a & r/a	0.35								LOW	0		
													MEDLOW	0	DESIGN CFM =	**1525**
				plenum pressure s/a	0.18	r/a pressure	0.17						MEDIUM	1105	CFM @ .6 " E.S.P.	
				max s/a dif press. loss	0.03	r/a grille press. Loss	0.02						MEDIUM HIGH	1255		
				min adjusted pressure s/a	0.15	adjusted pressure r/a	0.15						HIGH	1525	TEMPERATURE RISE	52 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	9	6
R/A	0	0	6	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	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	ENS	BED-2	BED-3	BED-5	ENS-2	LAUN	ENS-3	MBR	BED-4	DIN	KT/GT	KT/GT	KT/GT	KT/GT	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.79	1.32	1.32	2.03	1.60	1.35	0.56	1.63	0.96	1.79	2.03	2.05	2.86	2.86	2.86	2.86	1.17	2.98	1.78	3.63	3.63	3.63	3.63
CFM PER RUN HEAT	41	30	30	47	37	31	13	37	22	41	47	47	66	66	66	66	27	68	41	83	83	83	83
RM GAIN MBH.	2.90	0.86	0.86	2.66	2.06	2.51	0.19	2.24	0.43	2.90	3.31	2.69	2.84	2.84	2.84	2.84	0.24	0.61	0.36	0.54	0.54	0.54	0.54
CFM PER RUN COOLING	94	28	28	87	67	82	6	73	14	94	108	88	93	93	93	93	8	20	12	18	18	18	18
ADJUSTED PRESSURE	0.16	0.17	0.17	0.16	0.17	0.16	0.17	0.17	0.17	0.16	0.15	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	69	53	61	60	49	25	48	55	48	73	23	10	43	47	46	57	22	42	24	45	50	13	36
EQUIVALENT LENGTH	160	150	130	190	150	140	190	190	160	140	190	150	130	130	130	130	160	150	110	120	110	120	130
TOTAL EFFECTIVE LENGTH	229	203	191	250	199	165	238	245	208	213	213	160	173	177	176	187	182	192	134	165	160	133	166
ADJUSTED PRESSURE	0.07	0.08	0.09	0.06	0.09	0.1	0.07	0.07	0.08	0.08	0.07	0.1	0.09	0.09	0.09	0.09	0.09	0.09	0.13	0.1	0.1	0.12	0.1
ROUND DUCT SIZE	**6**	4	4	**6**	5	**6**	4	5	4	**6**	**6**	**6**	**6**	**6**	**6**	**6**	4	5	4	5	5	5	5
HEATING VELOCITY (ft/min)	209	344	344	240	272	158	149	272	252	209	240	240	337	337	337	337	310	499	470	609	609	609	609
COOLING VELOCITY (ft/min)	479	321	321	444	492	418	69	536	161	479	551	449	474	474	474	474	92	147	138	132	132	132	132
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	B	A	A	E	E	C	E	D	E	B	E	C	A	A	B	B	E	D	C	A	B	C	D

RUN #	25	26	27	28		30	31	32	33
ROOM NAME	BED-3	LAUN	BAS	FOY		WIC	BED-3	BAS	ENS-4/5
RM LOSS MBH.	1.60	1.63	3.63	2.98		0.79	1.60	3.63	0.45
CFM PER RUN HEAT	37	37	83	68		18	37	83	10
RM GAIN MBH.	2.06	2.24	0.54	0.61		0.23	2.06	0.54	0.15
CFM PER RUN COOLING	67	73	18	20		8	67	18	5
ADJUSTED PRESSURE	0.17	0.17	0.16	0.17		0.17	0.17	0.16	0.17
ACTUAL DUCT LGH.	45	57	33	40		60	58	22	39
EQUIVALENT LENGTH	140	150	180	150		150	160	120	140
TOTAL EFFECTIVE LENGTH	185	207	213	190		210	218	142	179
ADJUSTED PRESSURE	0.09	0.08	0.08	0.09		0.08	0.08	0.11	0.1
ROUND DUCT SIZE	5	5	**6**	5		4	5	5	4
HEATING VELOCITY (ft/min)	272	272	423	499		207	272	609	115
COOLING VELOCITY (ft/min)	492	536	92	147		92	492	132	57
OUTLET GRILL SIZE	3X10	3X10	4X10	3X10		3X10	3X10	3X10	3X10
TRUNK	E	D	D	D		B	E	C	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	275	0.08	8.6	8	x	8	619	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	315	0.07	9.4	12	x	8	473	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	885	0.07	13.9	22	x	8	724	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	376	0.07	10.1	12	x	8	564	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	643	0.06	12.8	20	x	8	579	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1165	0.06	16	32	x	8	655
TRUNK Y	430	0.06	11	14	x	8	553
TRUNK Z	920	0.06	14.6	24	x	8	690
DROP	1525	0.06	17.7	24	x	14	654

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	130	130	130	130	360	300	50	50	0	0	0	0	0	0	0	245
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.	62	69	49	53	30	52	60	57	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	155	165	145	185	185	140	205	205	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	217	234	194	238	215	192	265	262	1	1	1	1	1	1	1	159
ADJUSTED PRESSURE	0.07	0.06	0.08	0.06	0.07	0.08	0.06	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6.8	7	6.5	7	9.9	8.9	4.9	4.9	0	0	0	0	0	0	0	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	30	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

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TYPE: 4202- ROSEDALE LO # 77466
SITE NAME: PINE VALLEY & TESTON OPT. 5 BED

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	4	@ 10.6 cfm	42.4	cfm
Kitchen & Bathrooms	6	@ 10.6 cfm	63.6	cfm
Other Rooms	7	@ 10.6 cfm	74.2	cfm
Table 9.32.3.A.		TOTAL	222.6	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	95.4	cfm

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	222.6	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	67.6	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-4/5	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: September-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

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 77466 Model: 4202- ROSEDALE Builder: GOLD PARK HOMES Date: 9/10/2018

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1733	10	17330
First	1733	11	19063
Second	2076	9	18684
Third	0	9	0
Fourth	0	9	0
		Total:	55,077.0 ft³
		Total:	1559.6 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 433.22 x 42 °C x 1.2 = 7464 W

= **25468 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.124 x 433.22 x 9 °C x 1.2 = 566 W

= **1931 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	25,468	9,960	1.278
2	0.3		15,351	0.498
3	0.2		16,904	0.301
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: 4202- ROSEDALE OPT. 5 BED **BUILDER:** GOLD PARK HOMES
SFQT: 3785 **LO#** 77466 **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):	55077.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 68.0 ft	WIDTH: 33.0 ft	EXPOSED PERIMETER:	202.0 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
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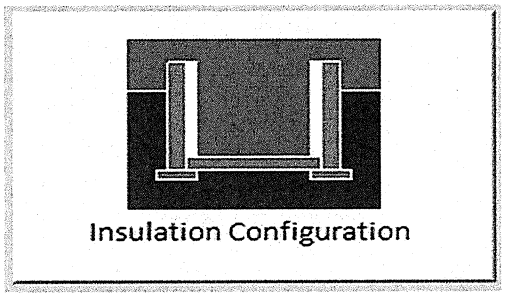
905-619-2300

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):	**20.7**	 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):	**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):	**2028**	

TYPE: 4202- ROSEDALE OPT. 5 BED
LO# 77466

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):	1559.6
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 2079.0 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: 4202- ROSEDALE OPT. 5 BED

LO# 77466

CSA-F280-12

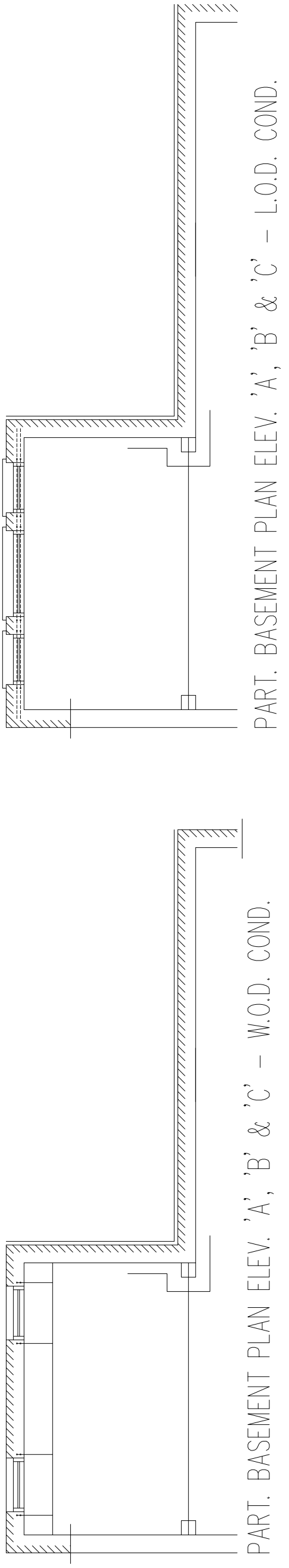
PACKAGE A1

WOD

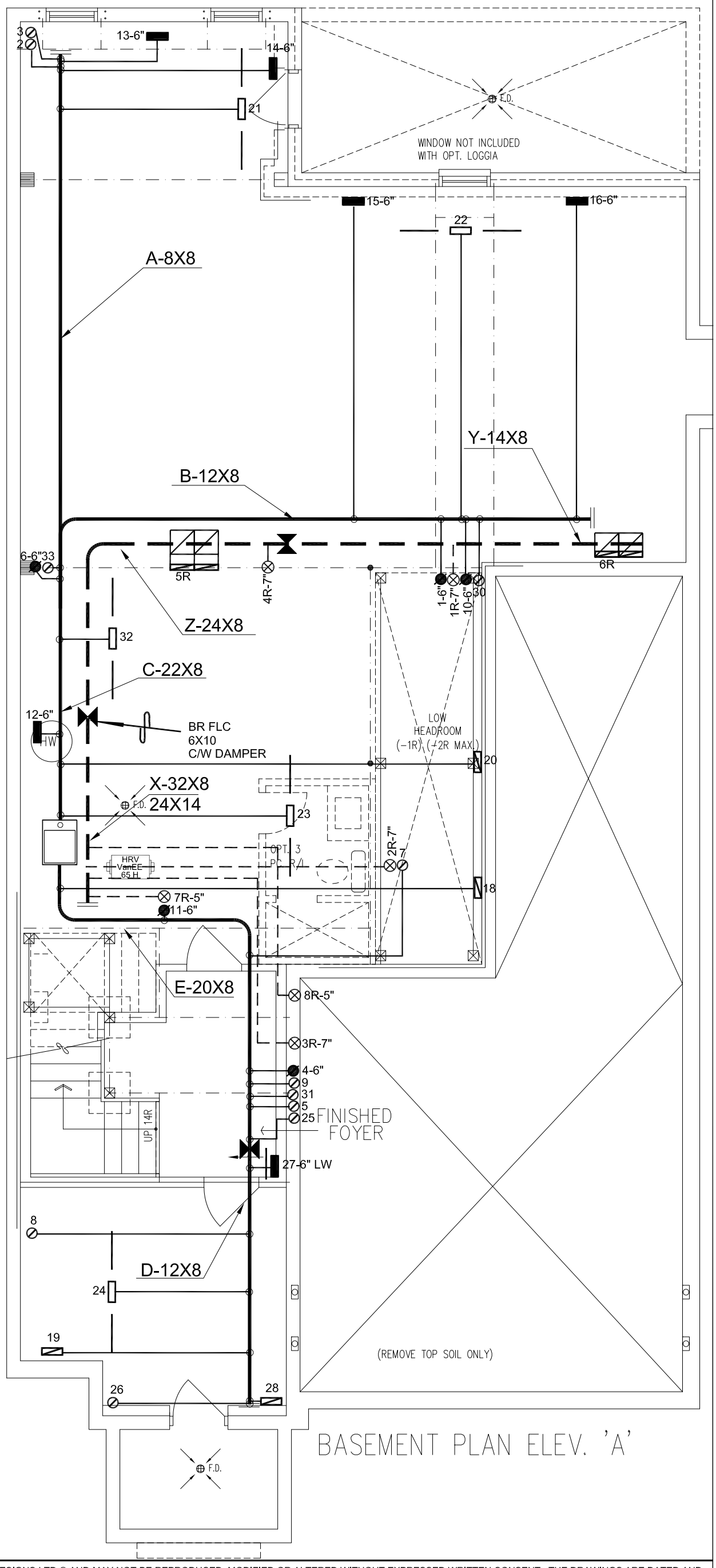
LOD

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.



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



HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
N	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	RETURN AIR STACK ABOVE		REDUCER
	RETURN AIR STACK 2nd FLOOR		

REVISIONS

No.	Description	Date
1.	DECK CONDITIONS ADDED	SEPT/2018
2.	ADDED RETURN #8 TO HALL	NOV/2018
3.	REVISED AS PER ARCHITECTURALS	FEB/2020

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Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT. 5 BED
ROSEDALE
4202 3592 sqft

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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 69821 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	EL296UH090XE48C
INPUT	88 MBTU/H
OUTPUT	85 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1525 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	16	6	5
1ST FLOOR	9	2	2
BASEMENT	6	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# 77466

CSA-F280-12

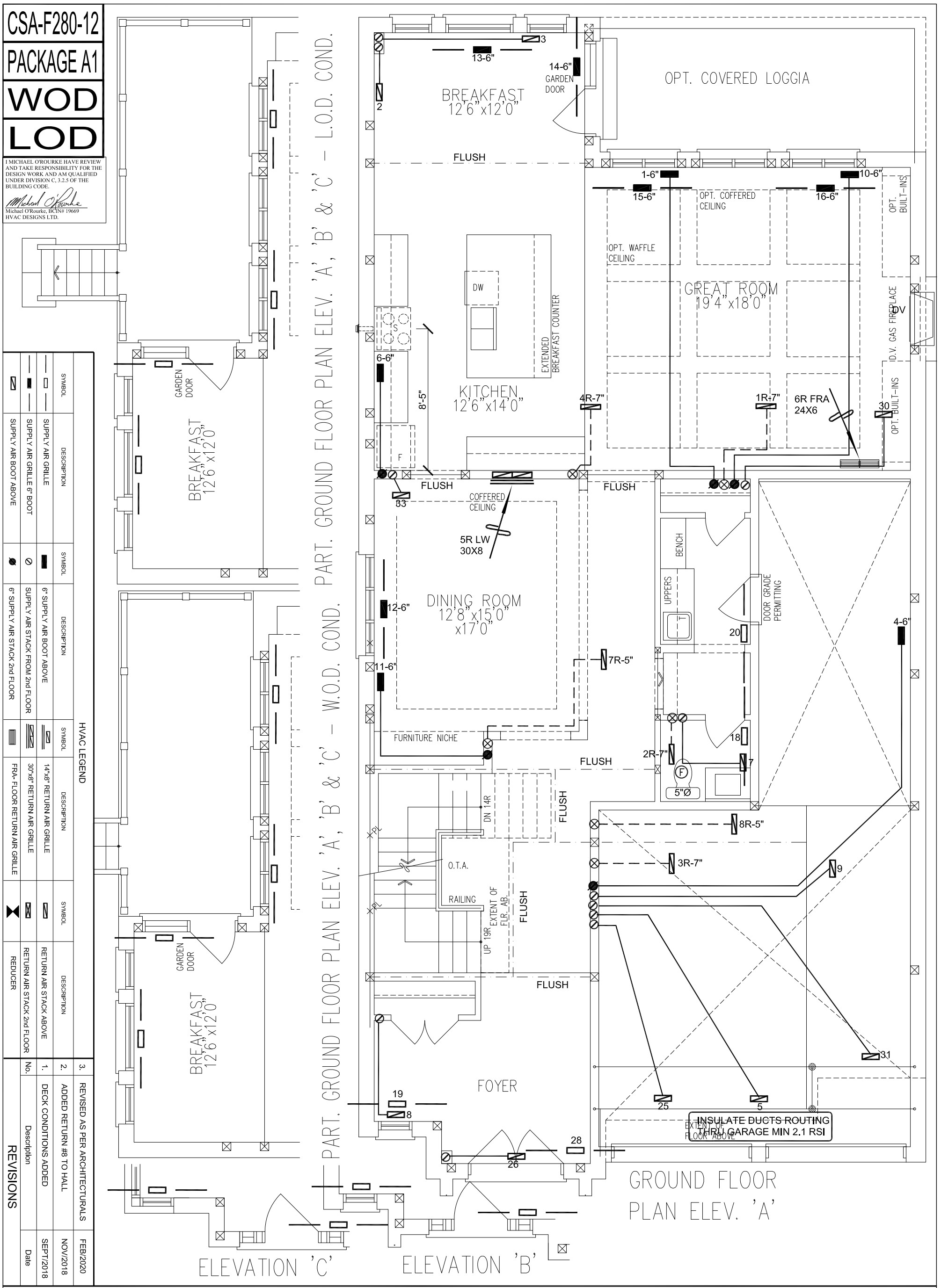
PACKAGE A1

WOD

LOD

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
N	SUPPLY AIR BOOT ABOVE
	SUPPLY AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT
⊘	SUPPLY AIR STACK FROM 2nd FLOOR
●	6" SUPPLY AIR STACK 2nd FLOOR

SYMBOL	DESCRIPTION
	6" SUPPLY AIR BOOT ABOVE
	14"x8" RETURN AIR GRILLE
	30"x8" RETURN AIR GRILLE
	FRA- FLOOR RETURN AIR GRILLE

SYMBOL	DESCRIPTION
	RETURN AIR STACK ABOVE
	RETURN AIR STACK 2nd FLOOR
⋈	REDUCER

REVISIONS

No.	Description	Date
1.	DECK CONDITIONS ADDED	SEPT/2018
2.	ADDED RETURN #8 TO HALL	NOV/2018
3.	REVISED AS PER ARCHITECTURALS	FEB/2020

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Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT. 5 BED
ROSEDALE
4202 3592 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services

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

Sheet Title

FIRST FLOOR HEATING LAYOUT

Date JAN/2018

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 77466

CSA-F280-12

PACKAGE A1

WOD

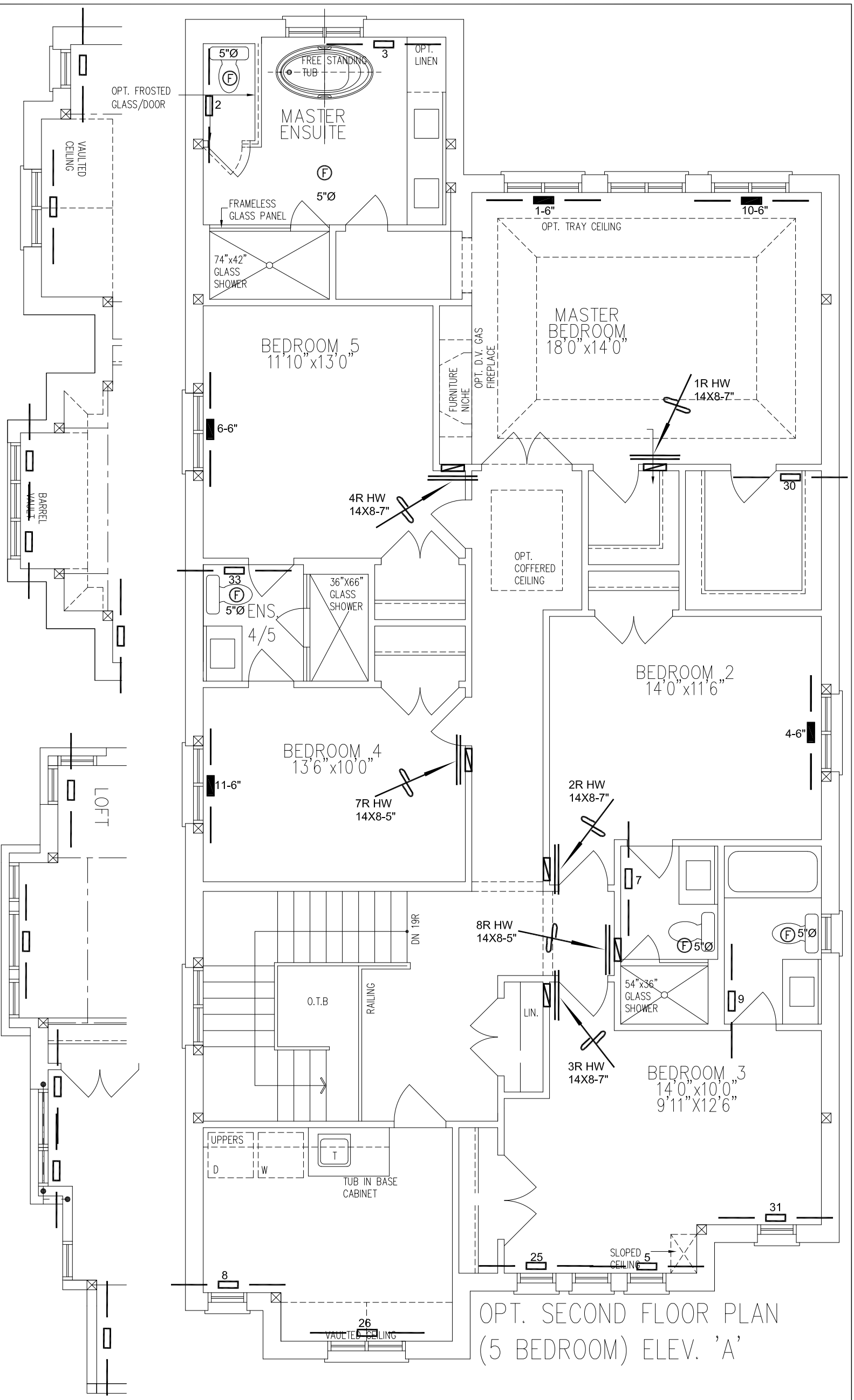
LOD

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.

PARTIAL SECOND FLOOR PLAN – ELEVATION 'B'

PARTIAL SECOND FLOOR PLAN – ELEVATION 'C'



HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE

SYMBOL	DESCRIPTION
	RETURN AIR STACK ABOVE
	RETURN AIR STACK 2nd FLOOR
	REDUCER

REVISIONS

No.	Description	Date
1.	DECK CONDITIONS ADDED	SEPT/2018
2.	ADDED RETURN #8 TO HALL	NOV/2018
3.	REVISED AS PER ARCHITECTURALS	FEB/2020

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Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT. 5 BED
ROSEDALE
4202 3592 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.

Sheet Title

SECOND FLOOR HEATING LAYOUT

Date JAN/2018

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 77466

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:** 4202- ROSEDALE OPT. 5 BED - OPT SERV STAIR **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.

February 28, 2020
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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SITE NAME: PINE VALLEY & TESTON | OPT. 5 BED - OPT SERV STAIR | DATE: Feb-20 | WINTER NATURAL AIR CHANGE RATE 0.340 | HEAT LOSS ΔT °F. 76 | CSA-F280-12
BUILDER: GOLD PARK HOMES | TYPE: 4202- ROSEDALE | GFA: 3700 | LO# 85451 | SUMMER NATURAL AIR CHANGE RATE 0.124 | HEAT GAIN ΔT °F. 16 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			ENS-2			BED-5			ENS-3			ENS-4/5				
EXP. WALL			34			37				12			36			16			0			13			9			6				
CLG. HT.			10			9				9			9			9			9			9			9			9				
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	340			333				108			324			144			0			117			81			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		18	383	303	0	0	0	0	0	0	0	0	0	0	0	0	9	192	151	0	0	0		
EAST	21.3	42.4	0	0	0	0	0	0		0	0	0	53	1128	2247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SOUTH	21.3	25.7	0	0	0	0	0	0		0	0	0	0	0	0	38	809	978	0	0	0	18	383	463	0	0	0	0	0	0		
WEST	21.3	42.4	54	1149	2289	18	383	763		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	286	1276	265	315	1406	292		90	402	83	271	1209	251	106	473	98	0	0	0	99	442	92	72	321	67	54	241	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		
EXPOSED CLG	1.3	0.6	285	366	182	210	270	134		228	293	146	280	359	179	240	308	153	104	133	66	182	234	116	45	58	29	84	108	54		
NO ATTIC EXPOSED CLG	2.7	1.4	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		
EXPOSED FLOOR	2.6	0.5	0	0	0	0	0	0		144	367	76	280	714	148	0	0	0	104	265	55	0	0	0	45	115	24	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				2791			2058				1445			3411			1590			399			1058			685			349		
SUB TOTAL HT GAIN					2736			1189				608			2825			1230			122			671			271			104	
LEVEL FACTOR / MULTIPLIER			0.20	0.29		0.20	0.29			0.20	0.29		0.20	0.29		0.20	0.29		0.20	0.29		0.20	0.29		0.20	0.29		0.20	0.29			
AIR CHANGE HEAT LOSS				813			600				421			994			463			116			308			200			102			
AIR CHANGE HEAT GAIN					302			131				67			312			136			13			74			30			11	
DUCT LOSS				0			0				187			440			0			51			0			89			0			
DUCT GAIN					0			0				190			436			0			13			0			30			0	
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	1		240	0		0	0		0		
HEAT GAIN APPLIANCES/LIGHTS					985			0				985			985			985			0			985			0			0	
TOTAL HT LOSS BTU/H				3605			2658				2052			4845			2053			566			1367			974			450			
TOTAL HT GAIN x 1.3 BTU/H					5854			1717				2716			6237			3367			193			2561			430			150		

ROOM USE			DIN			KT/GT				LAUN			PWD			FOY			MUD			WIC				LOD			BAS		
EXP. WALL			17			100				32			16			59			17			6				43			202		
CLG. HT.			11			11				9			12			11			12			9				10			10		
	FACTORS																														
GRS.WALL AREA	LOSS	GAIN	187			1100				288			192			649			204			54				430			1672		
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	10	213	168		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
EAST	21.3	42.4	0	0	0	0	0	0		41	872	1738	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
SOUTH	21.3	25.7	34	724	875	29	617	746		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
WEST	21.3	42.4	0	0	0	123	2617	5214		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		20	426	848	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	10	252	52		0	0	0	0	0	0	57	1439	299	20	505	105	0	0	0		0	0	0	20	505	105
NET EXPOSED WALL	4.5	0.9	153	683	142	928	4141	861		247	1102	229	192	857	178	592	2642	549	184	821	171	54	241	50		0	0	0	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		238	856	178	348	1252	260
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0		388	498	248	0	0	0	0	0	0	0	0	0	84	108	54		0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.4	0	0	0	0	0	0		30	82	41	0	0	0	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		0	0	0	0	0	0	0	0	0	0	0	0	84	214	45		0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0				0			0			0			0			0							6921		
SLAB ON GRADE HEAT LOSS				0			0				0			0			0			0			0				0				
SUBTOTAL HT LOSS				1406			7841				2555			857			4081			1326			563				1282			8678		
SUB TOTAL HT GAIN					1017			7042				2256			178			848			276			148					1026			365
LEVEL FACTOR / MULTIPLIER			0.30	0.48		0.30	0.48			0.20	0.29		0.30	0.48		0.30	0.48		0.30	0.48		0.20	0.29						0.50	1.24		
AIR CHANGE HEAT LOSS				670			3736				745			408			1944			632			164							12316		
AIR CHANGE HEAT GAIN					112			777				249			20			94			30			16								154
DUCT LOSS				0			0				0			0			0			0			73							0		
DUCT GAIN					0			0				0			0			0			0			16								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					985			985				985			0			0			0			0				0				985
TOTAL HT LOSS BTU/H				2076			11577				3300			1265			6025			1958			800				1282			20994		
TOTAL HT GAIN x 1.3 BTU/H					2748			11445				4536			257			1225			398			235					1334			1954

TOTAL HEAT GAIN BTU/H: 48018 | TONS: 4.00 | LOSS DUE TO VENTILATION LOAD BTU/H: 3181 | STRUCTURAL HEAT LOSS: 67848 | TOTAL COMBINED HEAT LOSS BTU/H: 71029

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

OPT. 5 BED - OPT SERV STAIR
TYPE: 4202- ROSEDALE DATE: Feb-20 GFA: 3700 LO# 85451

HEATING CFM	1525		COOLING CFM	1525			furnace pressure	0.6										^LENNOX			AFUE = 96 %			
TOTAL HEAT LOSS	67,848		TOTAL HEAT GAIN	47,357			furnace filter	0.05										EL296UH090XE48C	90		INPUT (BTU/H) = 88,000			
AIR FLOW RATE CFM	22.48		AIR FLOW RATE CFM	32.2			a/c coil pressure	0.2										FAN SPEED			OUTPUT (BTU/H) = **85,000**			
							available pressure											LOW	0					
							for s/a & r/a	0.35										MEDLOW	0		DESIGN CFM = **1525**			
							plenum pressure s/a	0.18			r/a pressure	0.17						MEDIUM	1105		CFM @ .6 " E.S.P.			
							max s/a dif press. loss	0.03			r/a grille press. Loss	0.02						MEDIUM HIGH	1255					
							min adjusted pressure s/a	0.15			adjusted pressure r/a	0.15						HIGH	1525		TEMPERATURE RISE 52 °F			

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	9	6
R/A	0	0	6	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	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	ENS	BED-2	BED-3	BED-5	ENS-2	LAUN	ENS-3	MBR	BED-4	DIN	KT/GT	KT/GT	KT/GT	KT/GT	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.80	1.33	1.33	2.05	1.62	1.37	0.57	1.65	0.97	1.80	2.05	2.08	2.89	2.89	2.89	2.89	1.27	3.01	1.96	3.71	3.71	3.71	3.71
CFM PER RUN HEAT	41	30	30	46	36	31	13	37	22	41	46	47	65	65	65	65	28	68	44	83	83	83	83
RM GAIN MBH.	2.93	0.86	0.86	2.72	2.08	2.56	0.19	2.27	0.43	2.93	3.37	2.75	2.86	2.86	2.86	2.86	0.26	0.61	0.40	0.55	0.55	0.55	0.55
CFM PER RUN COOLING	94	28	28	87	67	82	6	73	14	94	108	88	92	92	92	92	8	20	13	18	18	18	18
ADJUSTED PRESSURE	0.16	0.17	0.17	0.16	0.17	0.16	0.17	0.17	0.17	0.16	0.15	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	62	53	61	60	49	25	48	55	48	67	23	10	43	47	46	57	22	42	24	45	50	13	36
EQUIVALENT LENGTH	160	150	130	190	150	140	190	190	160	180	190	150	130	130	130	130	160	150	110	120	110	120	130
TOTAL EFFECTIVE LENGTH	222	203	191	250	199	165	238	245	208	247	213	160	173	177	176	187	182	192	134	165	160	133	166
ADJUSTED PRESSURE	0.07	0.08	0.09	0.06	0.09	0.1	0.07	0.07	0.08	0.07	0.07	0.1	0.09	0.09	0.09	0.09	0.09	0.09	0.13	0.1	0.1	0.12	0.1
ROUND DUCT SIZE	**6**	4	4	**6**	5	**6**	4	5	4	**6**	**6**	**6**	**6**	**6**	**6**	**6**	4	5	4	5	5	5	5
HEATING VELOCITY (ft/min)	209	344	344	235	264	158	149	272	252	209	235	240	331	331	331	331	321	499	505	609	609	609	609
COOLING VELOCITY (ft/min)	479	321	321	444	492	418	69	536	161	479	551	449	469	469	469	469	92	147	149	132	132	132	132
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	C	A	A	E	E	C	E	D	E	C	E	C	A	A	B	B	E	D	C	A	B	C	D

RUN #	25	26	27	28		30	31	32	33
ROOM NAME	BED-3	LAUN	BAS	FOY		WIC	BED-3	BAS	ENS-4/5
RM LOSS MBH.	1.62	1.65	3.71	3.01		0.80	1.62	3.71	0.45
CFM PER RUN HEAT	36	37	83	68		18	36	83	10
RM GAIN MBH.	2.08	2.27	0.55	0.61		0.24	2.08	0.55	0.15
CFM PER RUN COOLING	67	73	18	20		8	67	18	5
ADJUSTED PRESSURE	0.17	0.17	0.16	0.17		0.17	0.17	0.16	0.17
ACTUAL DUCT LGH.	45	57	33	40		53	58	22	39
EQUIVALENT LENGTH	140	150	180	150		180	160	120	140
TOTAL EFFECTIVE LENGTH	185	207	213	190		233	218	142	179
ADJUSTED PRESSURE	0.09	0.08	0.08	0.09		0.07	0.08	0.11	0.1
ROUND DUCT SIZE	5	5	**6**	5		4	5	5	4
HEATING VELOCITY (ft/min)	264	272	423	499		207	264	609	115
COOLING VELOCITY (ft/min)	492	536	92	147		92	492	132	57
OUTLET GRILL SIZE	3X10	3X10	4X10	3X10		3X10	3X10	3X10	3X10
TRUNK	E	D	D	D		C	E	C	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	273	0.08	8.6	8	x	8	614	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	213	0.09	7.6	10	x	8	383	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	884	0.07	13.8	22	x	8	723	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	376	0.07	10.1	12	x	8	564	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	639	0.06	12.7	18	x	8	639	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1165	0.06	16	32	x	8	655
TRUNK Y	430	0.06	11	14	x	8	553
TRUNK Z	920	0.06	14.6	24	x	8	690
DROP	1525	0.06	17.7	24	x	14	654

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	0	
AIR VOLUME	130	130	130	130	360	300	50	50	0	0	0	0	0	0	0	0	245
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	0.15
ACTUAL DUCT LGH.	61	69	49	53	30	52	60	57	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	165	145	185	185	140	205	205	0	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	236	234	194	238	215	192	265	262	1	1	1	1	1	1	1	1	159
ADJUSTED PRESSURE	0.06	0.06	0.08	0.06	0.07	0.08	0.06	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	7	7	6.5	7	9.9	8.9	4.9	4.9	0	0	0	0	0	0	0	0	8
INLET GRILL SIZE	8	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	X
INLET GRILL SIZE	14	14	14	14	30	30	14	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.

Michael O'Rourke - INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

HVAC DESIGNS LTD.
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TYPE: 4202- ROSEDALE LO # 85451
SITE NAME: PINE VALLEY & TESTON OPT. 5 BED - OPT SERV STAIR

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	4	@ 10.6 cfm	42.4	cfm
Kitchen & Bathrooms	6	@ 10.6 cfm	63.6	cfm
Other Rooms	4	@ 10.6 cfm	42.4	cfm
Table 9.32.3.A.		TOTAL	190.8	cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED 9.32.3.4.(1)

1	Bedroom	31.8	cfm
2	Bedroom	47.7	cfm
3	Bedroom	63.6	cfm
4	Bedroom	79.5	cfm
5	Bedroom	95.4	cfm
	TOTAL	**95.4**	**cfm**

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	190.8	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	35.8	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-4/5	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: February-20

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

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 85451 Model: 4202- ROSEDALE Builder: GOLD PARK HOMES Date: 2/28/2020

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1647	10	16470
First	1647	11	18117
Second	2076	9	18684
Third	0	9	0
Fourth	0	9	0
		Total:	53,271.0 ft³
		Total:	1508.5 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 419.02 x 42 °C x 1.2 = 7219 W

= **24633 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 419.02 x 9 °C x 1.2 = 547 W

= **1868 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	24,633	9,960	1.237
2	0.3		15,512	0.476
3	0.2		16,904	0.291
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: 4202- ROSEDALE OPT. 5 BED - OPT SERV STAIR **BUILDER:** GOLD PARK HOMES
SFQT: 3700 **LO#** 85451 **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):	53271.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.65	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 68.0 ft	WIDTH: 33.0 ft	EXPOSED PERIMETER:	202.0 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

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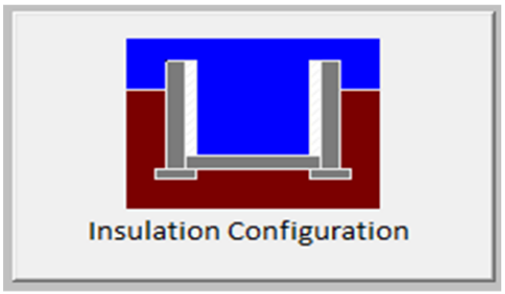
Residential Foundation Thermal Load Calculator

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):	**20.7**	 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):	**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):	**2028**	

TYPE: 4202- ROSEDALE OPT. 5 BED - OPT SERV STAIR

LO# 85451

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):	1508.5
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 2010.8 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: 4202- ROSEDALE OPT. 5 BED - OPT SERV STAIR

LO# 85451

CSA-F280-12

PACKAGE A1

WOD

LOD

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

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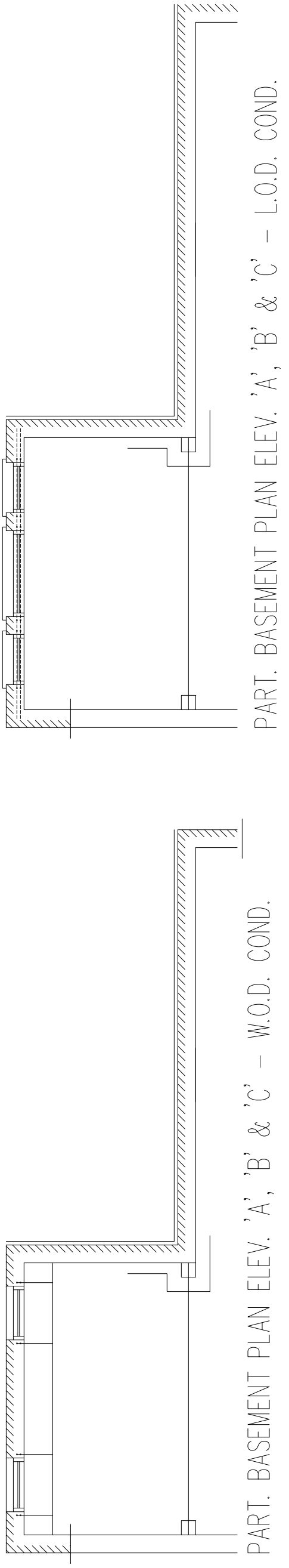
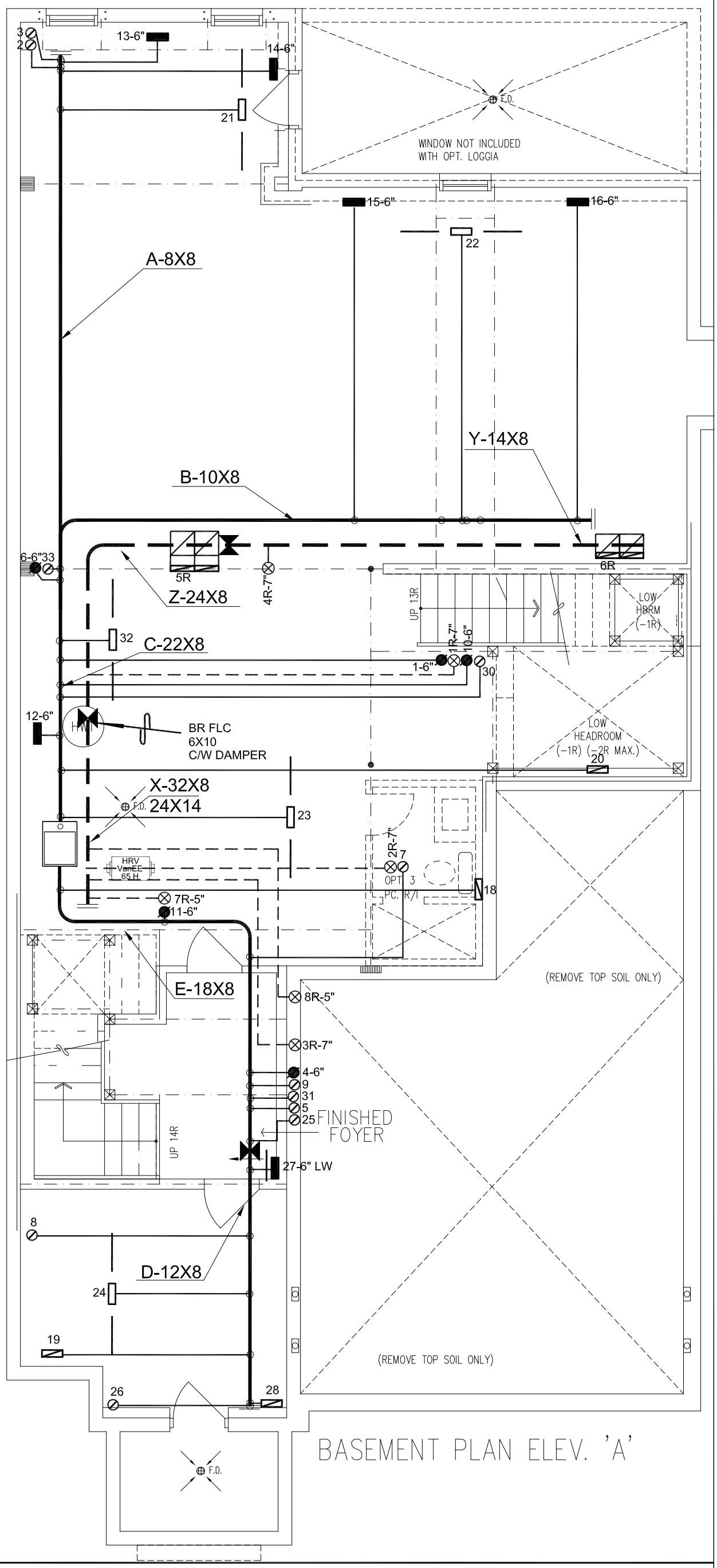
HVAC DESIGNS LTD.



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

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



BASEMENT PLAN ELEV. 'A'

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE				RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR GRILLE				REDUCER

REVISIONS

No.	Description	Date
1.		
2.		
3.		

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Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT SERV STAIR
ROSEDALE - OPT 5 BED
4202 3700 sqft

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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 71029 BTU/H

UNIT DATA

MAKE	LENNOX	
MODEL	EL296UH090XE48C	
INPUT	88	MBTU/H
OUTPUT	85	MBTU/H
COOLING	4.0	TONS
FAN SPEED	1525	cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	16	6	5
1ST FLOOR	9	2	2
BASEMENT	6	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 FEB/2020

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 85451

CSA-F280-12

PACKAGE A1

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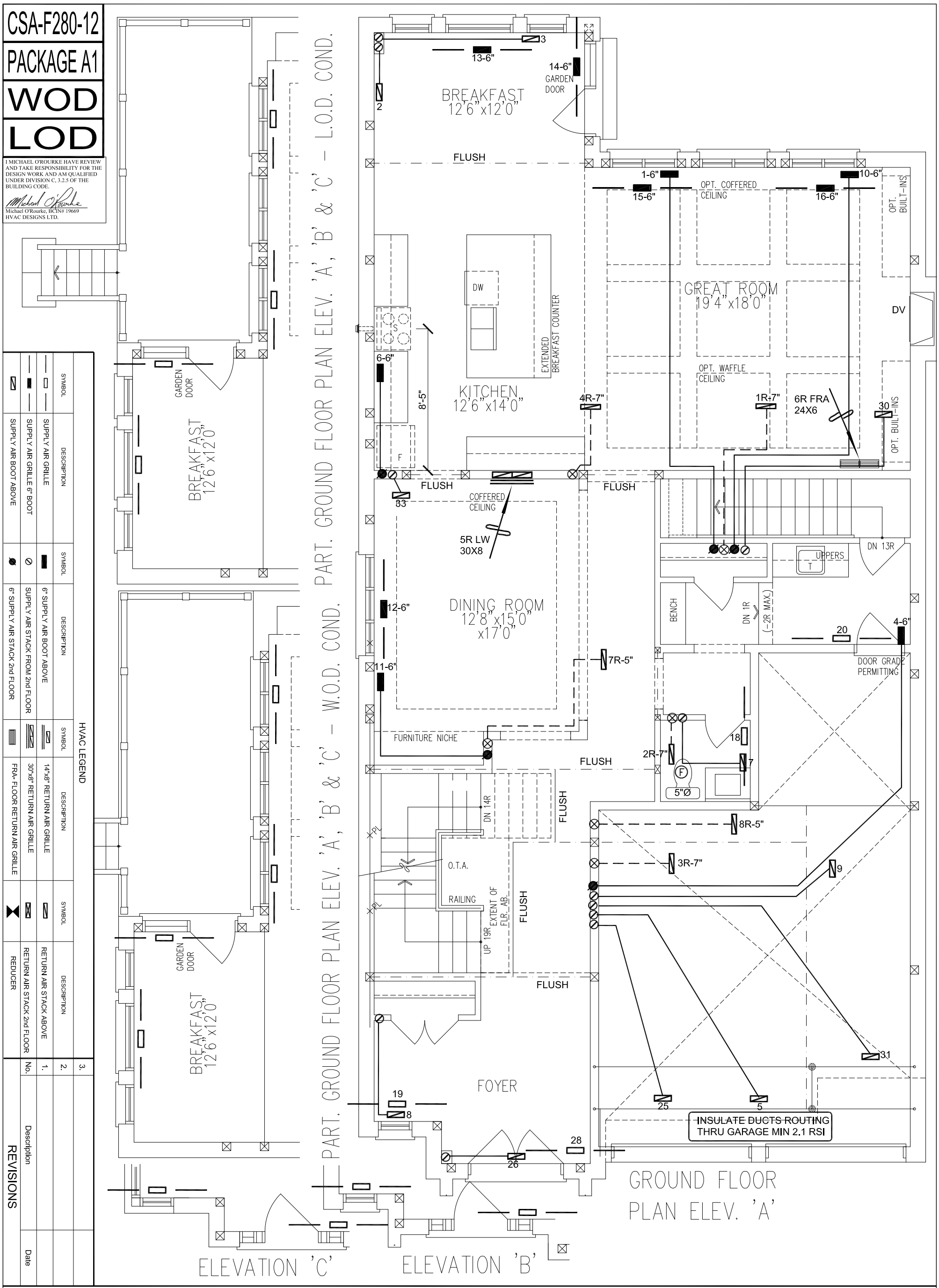

HVAC LEGEND

SYMBOL	DESCRIPTION
N	SUPPLY AIR BOOT ABOVE
	SUPPLY AIR GRILLE
⊘	SUPPLY AIR GRILLE 6" BOOT
●	6" SUPPLY AIR STACK 2nd FLOOR
	FRA- FLOOR RETURN AIR GRILLE
	14"x8" RETURN AIR GRILLE
	30"x8" RETURN AIR GRILLE
	RETURN AIR STACK ABOVE
	RETURN AIR STACK 2nd FLOOR
	REDUCER

SYMBOL	DESCRIPTION
	6" SUPPLY AIR BOOT ABOVE
	SUPPLY AIR STACK FROM 2nd FLOOR

No.	Description	Date
1.		
2.		
3.		

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT SERV STAIR
ROSEDALE - OPT 5 BED
4202 3700 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 FEB/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 85451

CSA-F280-12

PACKAGE A1

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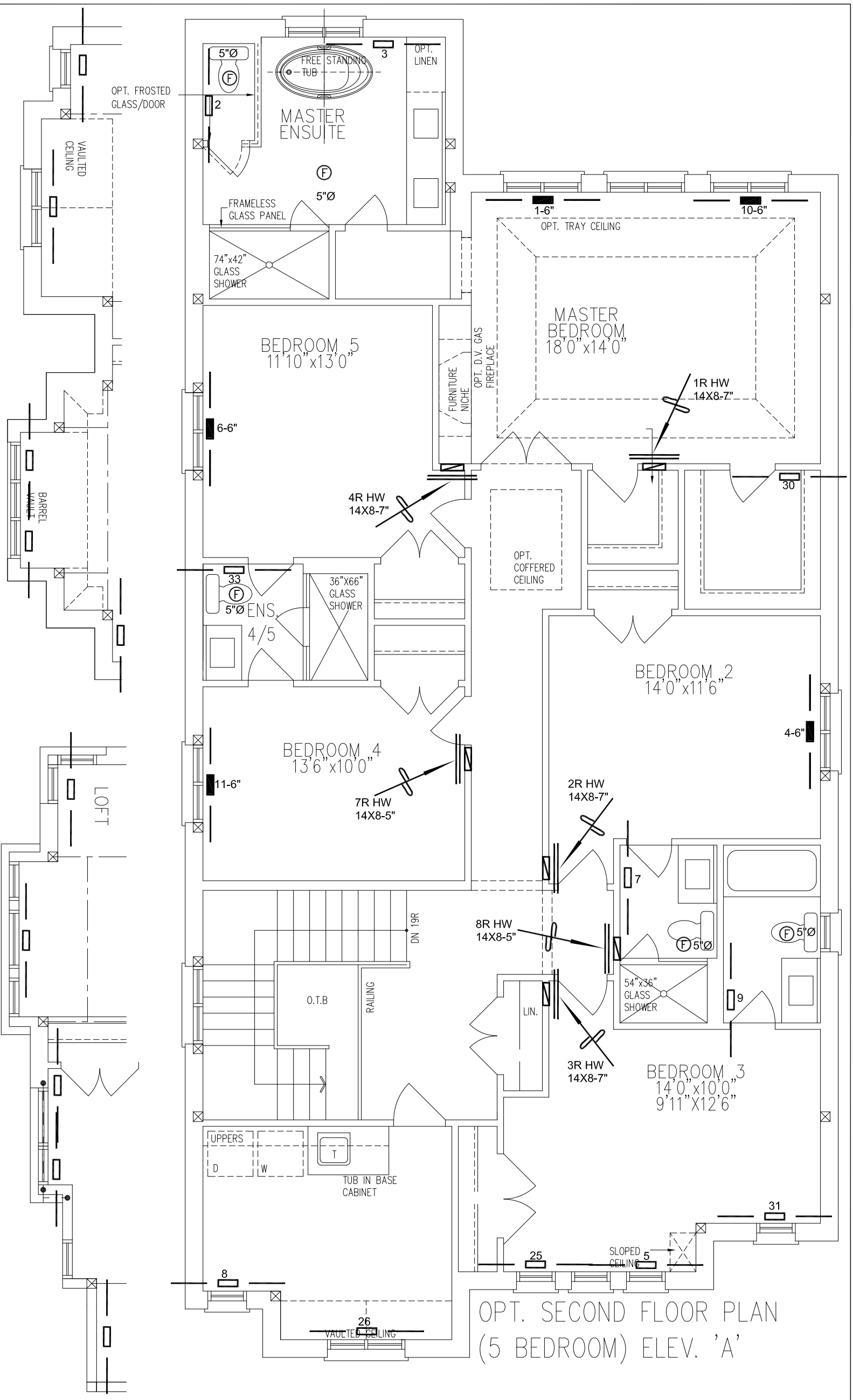
PARTIAL SECOND FLOOR PLAN – ELEVATION 'B'

PARTIAL SECOND FLOOR PLAN – ELEVATION 'C'



HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE

SYMBOL	DESCRIPTION
	RETURN AIR STACK ABOVE
	RETURN AIR STACK 2nd FLOOR
	REDUCER

REVISIONS

No.	Description	Date
1.		
2.		
3.		

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Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT SERV STAIR
ROSEDALE - OPT 5 BED
4202 3700 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services

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

Sheet Title

SECOND FLOOR HEATING LAYOUT

Date FEB/2020

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 85451

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:** 4202- ROSEDALE OPT. 5 BED - WOB **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.

February 25, 2020
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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SITE NAME: PINE VALLEY & TESTON | OPT. 5 BED - WOB | DATE: Feb-20 | WINTER NATURAL AIR CHANGE RATE 0.407 | HEAT LOSS ΔT °F. 76 | CSA-F280-12
BUILDER: GOLD PARK HOMES | TYPE: 4202- ROSEDALE | GFA: 3598 | LO# 79974 | SUMMER NATURAL AIR CHANGE RATE 0.137 | HEAT GAIN ΔT °F. 13 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			ENS-2			BED-5			ENS-3			ENS-4/5				
EXP. WALL			34			37				12			36			16			0			13			9			6				
CLG. HT.			10			9				9			9			9			9			9			9			9				
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	340			333				108			324			144			0			117			81			54				
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		
NORTH	21.3	16.0	0	0	0	0	0	0		18	383	288	0	0	0	0	0	0	0	0	0	0	0	0	9	192	144	0	0	0		
EAST	21.3	41.6	0	0	0	0	0	0		0	0	0	53	1128	2202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SOUTH	21.3	24.9	0	0	0	0	0	0		0	0	0	0	0	0	38	809	946	0	0	0	18	383	448	0	0	0	0	0	0		
WEST	21.3	41.6	54	1149	2244	18	383	748		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SKYLT.	37.2	101.5	0	0	0	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	4.3	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	0.8	286	1276	215	315	1406	237		90	402	68	271	1209	204	106	473	80	0	0	0	99	442	74	72	321	54	54	241	41		
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.6	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
EXPOSED CLG	1.3	0.6	285	366	167	210	270	123		228	293	134	280	359	165	240	308	141	104	133	61	182	234	107	45	58	26	84	108	49		
NO ATTIC EXPOSED CLG	2.7	1.3	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		
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0		144	367	62	280	714	120	0	0	0	104	265	45	0	0	0	45	115	19	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				2791			2058				1445			3411			1590			399			1058			685			349		
SUB TOTAL HT GAIN					2626			1108				551			2691			1167			106			630			244			90		
LEVEL FACTOR / MULTIPLIER			0.20	0.33		0.20	0.33			0.20	0.33		0.20	0.33		0.20	0.33		0.20	0.33		0.20	0.33		0.20	0.33		0.20	0.33			
AIR CHANGE HEAT LOSS				932			687				482			1139			531			133			354			229			116			
AIR CHANGE HEAT GAIN					221			93				46			226			98			9			53			20			8		
DUCT LOSS				0			0				193			455			0			53			0			91			0			
DUCT GAIN					0			0				156			388			0			11			0			26			0		
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	1		240	0		0	0		0		
HEAT GAIN APPLIANCES/LIGHTS					728			0				728			728			728			0			728			0			0		
TOTAL HT LOSS BTU/H				3723			2746				2120			5005			2121			585			1412			1006			465			
TOTAL HT GAIN x 1.3 BTU/H					5271			1561				2238			5554			2902			164			2145			378			127		

ROOM USE			DIN			KT/GT			LAUN			PWD			FOY			MUD			WIC			WOB			BAS		
EXP. WALL			17			100			32			15			59			15			6			43			159		
CLG. HT.			11			11			9			12			11			12			9			10			10		
	FACTORS																												
GRS.WALL AREA	LOSS	GAIN	187			1100			288			180			649			180			54			430			1113		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	21.3	16.0	0	0	0	10	213	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	553	415	0	0	0
EAST	21.3	41.6	0	0	0	0	0	0	41	872	1704	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	21.3	24.9	34	724	847	29	617	722	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST	21.3	41.6	0	0	0	123	2617	5111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98	2085	4072	0	0	0
SKYLT.	37.2	101.5	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	4.3	0	0	0	10	252	43	0	0	0	0	0	0	57	1439	242	20	505	85	0	0	0	20	505	85	20	505	85
NET EXPOSED WALL	4.5	0.8	153	683	115	928	4141	697	247	1102	186	180	803	135	592	2642	445	160	714	120	54	241	41	286	1276	215	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	0	0	0	0	0	0	477	1716	289
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	388	498	228	0	0	0	0	0	0	0	0	0	84	108	49	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	30	82	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	84	214	36	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0					2560		
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			552				
SUBTOTAL HT LOSS				1406			7841			2555			803			4081			1219			563			4972			4782		
SUB TOTAL HT GAIN					962			6733			2155			135			687			205			126				4787			374
LEVEL FACTOR / MULTIPLIER			0.30	0.55		0.30	0.55		0.20	0.33		0.30	0.55		0.30	0.55		0.30	0.55		0.20	0.33					0.50	1.45		
AIR CHANGE HEAT LOSS				776			4326			853			443			2252			673			188					14115			
AIR CHANGE HEAT GAIN					81			565			181			11			58			17			11						433	
DUCT LOSS				0			0			0			0			0			0			75					0			
DUCT GAIN					0			0			0			0			0			0			14						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					728			728			728			0			0			0			0						728	
TOTAL HT LOSS BTU/H				2182			12167			3409			1246			6333			1892			826			5523			18897		
TOTAL HT GAIN x 1.3 BTU/H					2301			10433			3983			191			969			289			195				6224			1996

TOTAL HEAT GAIN BTU/H: 47456 | TONS: 3.95 | LOSS DUE TO VENTILATION LOAD BTU/H: 3181 | STRUCTURAL HEAT LOSS: 71657 | TOTAL COMBINED HEAT LOSS BTU/H: 74838

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 — OPT. 5 BED - WOB
BUILDER: GOLD PARK HOMES — TYPE: 4202- ROSEDALE — DATE: Feb-20 — GFA: 3598 — LO# 79974

HEATING CFM	1525	COOLING CFM	1525	furnace pressure	0.6					^LENNOX		AFUE = 96 %
TOTAL HEAT LOSS	71,657	TOTAL HEAT GAIN	46,920	furnace filter	0.05					EL296UH090XE48C	90	INPUT (BTU/H) = 88,000
AIR FLOW RATE CFM	21.28	AIR FLOW RATE CFM	32.5	a/c coil pressure	0.2					FAN SPEED		OUTPUT (BTU/H) = **85,000**
				available pressure for s/a & r/a	0.35					LOW	0	
										MEDLOW	0	DESIGN CFM = **1525**
				plenum pressure s/a	0.18	r/a pressure	0.17			MEDIUM	1105	CFM @ .6 " E.S.P.
				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	TEMPERATURE RISE 52 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	9	6
R/A	0	0	6	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	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	ENS	BED-2	BED-3	BED-5	ENS-2	LAUN	ENS-3	MBR	BED-4	DIN	KT/GT	KT/GT	KT/GT	KT/GT	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.86	1.37	1.37	2.12	1.67	1.41	0.59	1.70	1.01	1.86	2.12	2.18	3.04	3.04	3.04	3.04	1.25	3.17	1.89	4.07	4.07	4.07	4.07
CFM PER RUN HEAT	40	29	29	45	36	30	12	36	21	40	45	46	65	65	65	65	27	67	40	87	87	87	87
RM GAIN MBH.	2.64	0.78	0.78	2.24	1.85	2.14	0.16	1.99	0.38	2.64	2.90	2.30	2.61	2.61	2.61	2.61	0.19	0.48	0.29	1.37	1.37	1.37	1.37
CFM PER RUN COOLING	86	25	25	73	60	70	5	65	12	86	94	75	85	85	85	85	6	16	9	45	45	45	45
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	69	53	61	60	49	25	48	55	48	73	23	10	43	47	46	57	22	42	24	45	65	13	36
EQUIVALENT LENGTH	160	150	130	190	150	140	190	190	160	140	190	150	130	130	130	130	160	150	110	160	140	120	130
TOTAL EFFECTIVE LENGTH	229	203	191	250	199	165	238	245	208	213	213	160	173	177	176	187	182	192	134	205	205	133	166
ADJUSTED PRESSURE	0.07	0.08	0.09	0.07	0.09	0.1	0.07	0.07	0.08	0.08	0.08	0.11	0.09	0.09	0.09	0.09	0.09	0.09	0.13	0.08	0.08	0.12	0.1
ROUND DUCT SIZE	**6**	4	4	**6**	5	**6**	4	5	4	**6**	**6**	**6**	5	5	5	5	4	5	4	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	204	333	333	229	264	153	138	264	241	204	229	235	477	477	477	477	310	492	459	444	444	444	444
COOLING VELOCITY (ft/min)	438	287	287	372	441	357	57	477	138	438	479	382	624	624	624	624	69	117	103	229	229	229	229
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	B	A	A	E	E	C	E	D	E	B	E	C	A	A	B	B	E	D	C	A	B	C	D

RUN #	25	26	27	28		30	31	32	33
ROOM NAME	BED-3	LAUN	BAS	FOY		WIC	BED-3	BAS	ENS-4/5
RM LOSS MBH.	1.67	1.70	4.07	3.17		0.83	1.67	4.07	0.47
CFM PER RUN HEAT	36	36	87	67		18	36	87	10
RM GAIN MBH.	1.85	1.99	1.37	0.48		0.20	1.85	1.37	0.13
CFM PER RUN COOLING	60	65	45	16		6	60	45	4
ADJUSTED PRESSURE	0.17	0.17	0.16	0.17		0.17	0.17	0.16	0.17
ACTUAL DUCT LGH.	45	57	33	40		60	58	22	39
EQUIVALENT LENGTH	140	150	180	150		150	160	120	140
TOTAL EFFECTIVE LENGTH	185	207	213	190		210	218	142	179
ADJUSTED PRESSURE	0.09	0.08	0.08	0.09		0.08	0.08	0.11	0.1
ROUND DUCT SIZE	5	5	**6**	5		4	5	**6**	4
HEATING VELOCITY (ft/min)	264	264	444	492		207	264	444	115
COOLING VELOCITY (ft/min)	441	477	229	117		69	441	229	46
OUTLET GRILL SIZE	3X10	3X10	4X10	3X10		3X10	3X10	4X10	3X10
TRUNK	E	D	D	D		B	E	C	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	275	0.08	8.6	8	x	8	619	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	315	0.07	9.4	10	x	8	567	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	890	0.07	13.9	22	x	8	728	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	380	0.07	10.1	12	x	8	570	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	638	0.07	12.3	18	x	8	638	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1165	0.06	16	32	x	8	655
TRUNK Y	430	0.06	11	14	x	8	553
TRUNK Z	920	0.06	14.6	24	x	8	690
DROP	1525	0.06	17.7	24	x	14	654

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	0	
AIR VOLUME	130	130	130	130	360	300	50	50	0	0	0	0	0	0	0	0	245
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	0.15
ACTUAL DUCT LGH.	62	69	49	53	30	52	60	57	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	155	165	145	185	185	140	205	205	0	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	217	234	194	238	215	192	265	262	1	1	1	1	1	1	1	1	159
ADJUSTED PRESSURE	0.07	0.06	0.08	0.06	0.07	0.08	0.06	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6.8	7	6.5	7	9.9	8.9	4.9	4.9	0	0	0	0	0	0	0	0	8
INLET GRILL SIZE	8	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	X
INLET GRILL SIZE	14	14	14	14	30	30	14	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.

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: 4202- ROSEDALE LO # 79974
SITE NAME: PINE VALLEY & TESTON OPT. 5 BED - WOB

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	4	@ 10.6 cfm	42.4	cfm
Kitchen & Bathrooms	6	@ 10.6 cfm	63.6	cfm
Other Rooms	4	@ 10.6 cfm	42.4	cfm
Table 9.32.3.A.		TOTAL	190.8	cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED 9.32.3.4.(1)

1	Bedroom	31.8	cfm
2	Bedroom	47.7	cfm
3	Bedroom	63.6	cfm
4	Bedroom	79.5	cfm
5	Bedroom	95.4	cfm
	TOTAL	**95.4**	**cfm**

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	190.8	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	35.8	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-4/5	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: February-20

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

INDIVIDUAL BCIN: 19669 Michael O'Rourke. MICHAEL O'ROURKE

HVAC DESIGNS LTD.

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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#: 79974 Model: 4202- ROSEDALE Builder: GOLD PARK HOMES Date: 2/25/2020

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1540	10	15400
First	1540	11	16940
Second	2076	9	18684
Third	0	9	0
Fourth	0	9	0
		Total:	51,024.0 ft³
		Total:	1444.8 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.407
SUMMER NATURAL AIR CHANGE RATE	0.137

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

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

0.407 x 401.34 x 42 °C x 1.2 = 8274 W

= **28230 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.137 x 401.34 x 7 °C x 1.2 = 468 W

= **1595 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 13 °F x 1.08 x 0.25 = **536 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	28,230	9,753	1.447
2	0.3		15,351	0.552
3	0.2		16,904	0.334
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: 4202- ROSEDALE OPT. 5 BED - WOB **BUILDER:** GOLD PARK HOMES
SFQT: 3598 **LO#** 79974 **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)	75

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):	51024.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
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: 68.0 ft	WIDTH: 33.0 ft	EXPOSED PERIMETER:	159.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	43.0 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

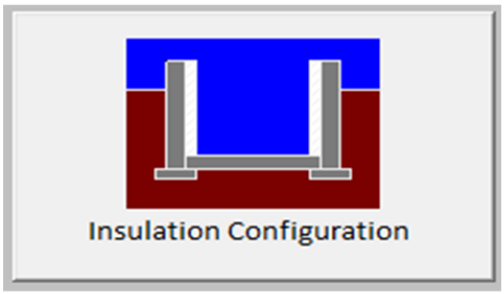
Michael O'Rourke

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):	**4.6**	 Insulation Configuration
Floor Width (m):	**10.1**	
Exposed Perimeter (m):	**48.5**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**1.79**	
Window Area (m^2):	**0.0**	
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):	**750**	

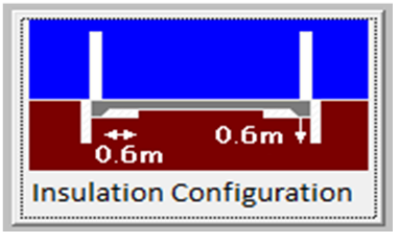
TYPE: 4202- ROSEDALE OPT. 5 BED - WOB
LO# 79974

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		
Length (m):	**1.5**	
Width (m):	**10.1**	
Exposed Perimeter (m):	**13.1**	

Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	

Results	
Heating Load (Watts):	**162**

TYPE: 4202- ROSEDALE OPT. 5 BED - WOB
LO# 79974

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):	9.14
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	1444.8
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 1926.0 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):	**0.407**
Cooling Air Leakage Rate (ACH/H):	**0.137**

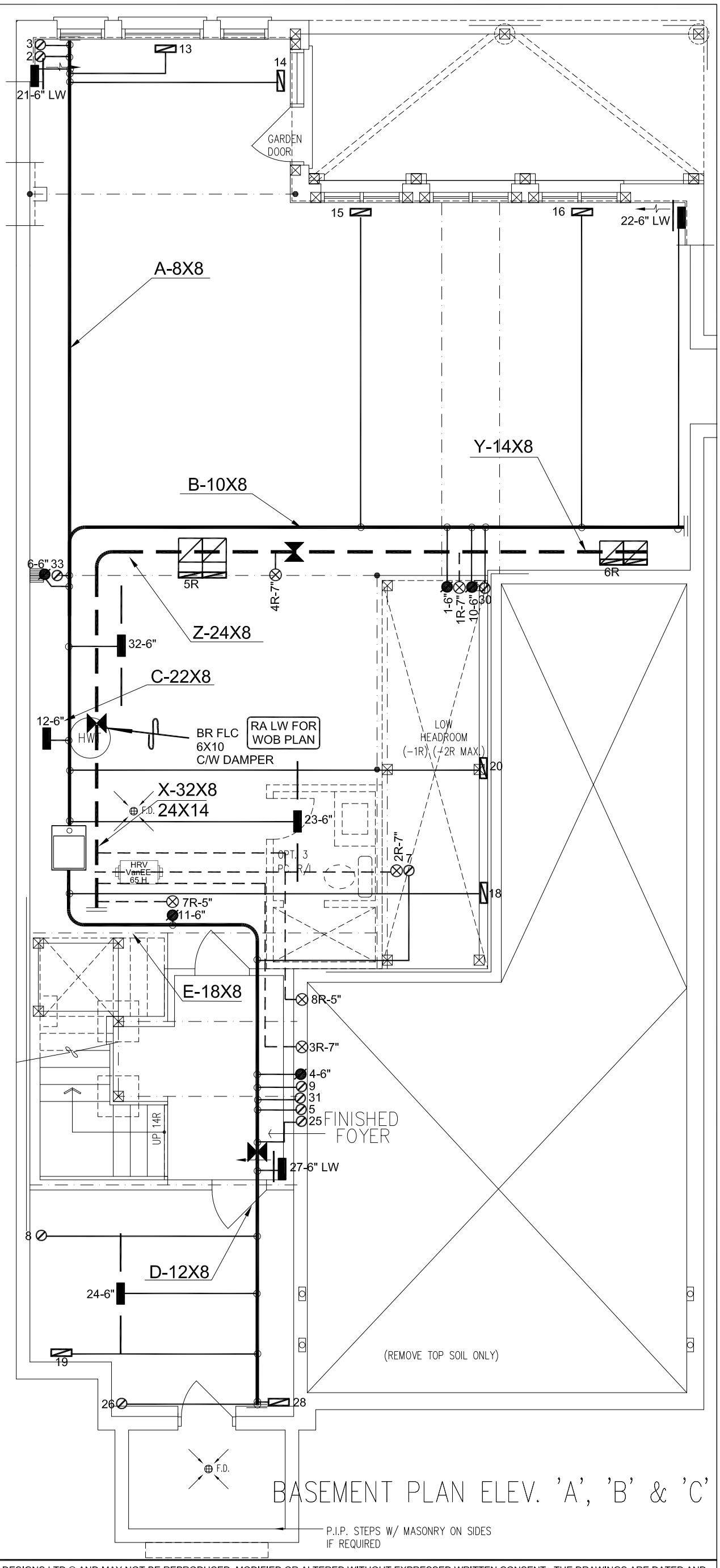
TYPE: 4202- ROSEDALE OPT. 5 BED - WOB

LO# 79974

CSA-F280-12 WOB
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.



BASEMENT PLAN ELEV. 'A', 'B' & 'C'

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		SUPPLY AIR GRILLE		SUPPLY AIR GRILLE 6" BOOT
	6" SUPPLY AIR BOOT ABOVE		SUPPLY AIR STACK FROM 2nd FLOOR		6" SUPPLY AIR STACK 2nd FLOOR
	14"x8" RETURN AIR GRILLE		30"x8" RETURN AIR GRILLE		FRA- FLOOR RETURN AIR GRILLE
	RETURN AIR STACK ABOVE		RETURN AIR STACK 2nd FLOOR		REDUCER

REVISIONS

No.	Description	Date
1.	ADDED RETURN #8 TO HALL	NOV/2018
2.	REVISED AS PER ARCHITECTURALS	FEB/2020
3.		

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT. 5 BED
ROSEDALE
4202 - WOB 3785 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.

HEAT LOSS 74838 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	EL296UH090XE48C
INPUT	88 MBTU/H
OUTPUT	85 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1525 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	16	6	5
1ST FLOOR	9	2	2
BASEMENT	6	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

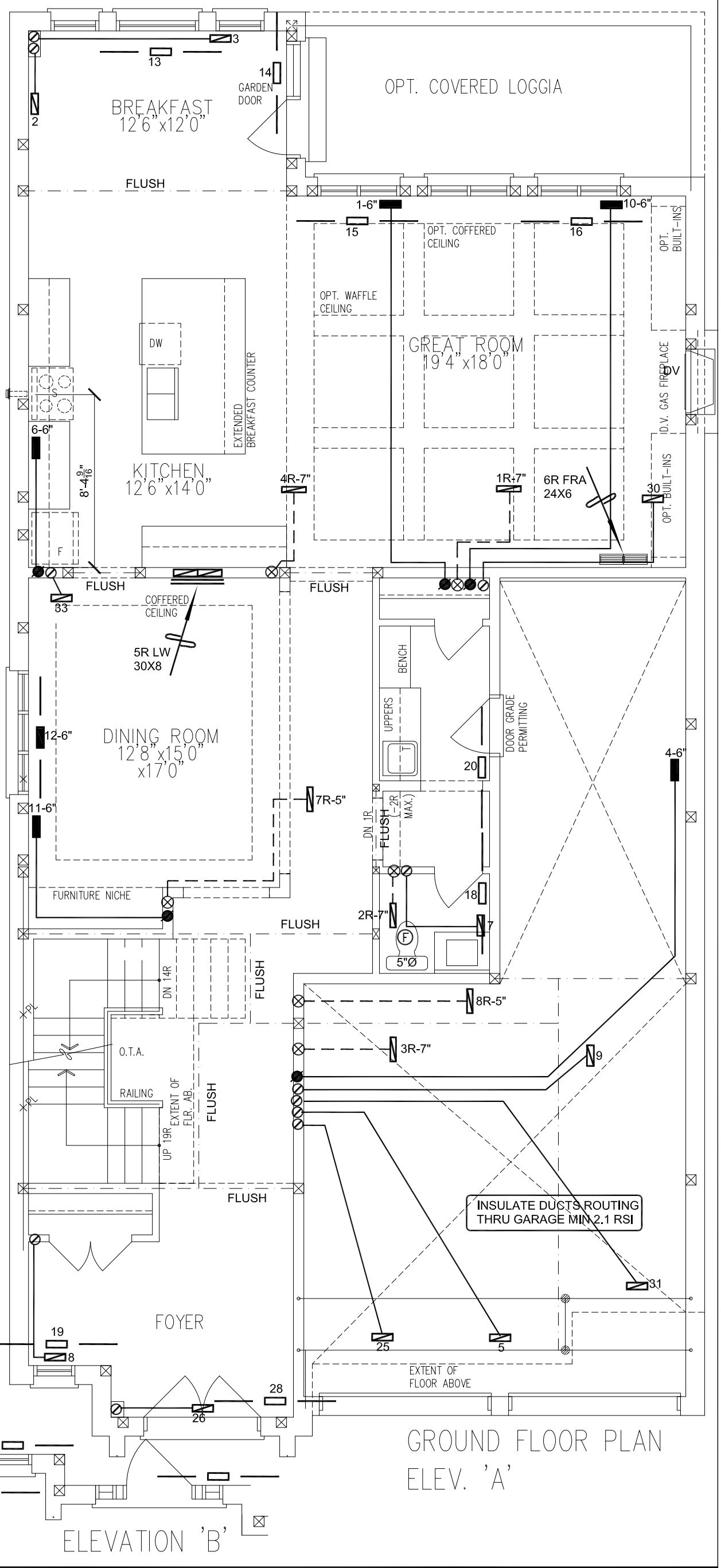
Date SEPT/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 79974

CSA-F280-12 WOB

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
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE
					RETURN AIR STACK ABOVE
					RETURN AIR STACK 2nd FLOOR
					REDUCER

REVISIONS

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2.	REVISED AS PER ARCHITECTURALS	FEB/2020
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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT. 5 BED
ROSEDALE
4202 - WOB 3785 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 SEPT/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 79974

CSA-F280-12 WOB

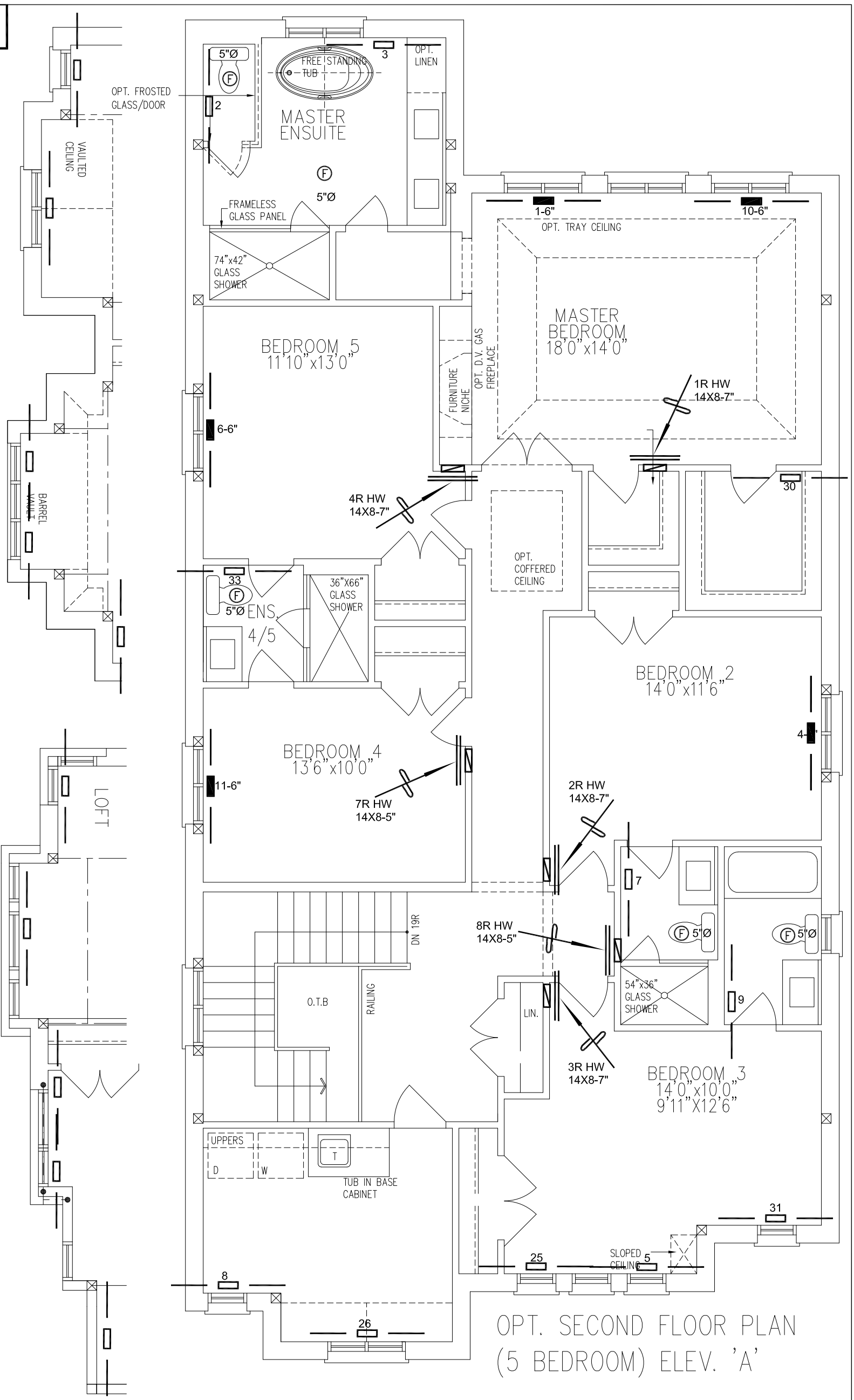
PACKAGE A1

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.

PARTIAL SECOND FLOOR PLAN – ELEVATION 'B'

PARTIAL SECOND FLOOR PLAN – ELEVATION 'C'



HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
N	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE

SYMBOL	DESCRIPTION
	RETURN AIR STACK ABOVE
	RETURN AIR STACK 2nd FLOOR
	REDUCER

REVISIONS

No.	Description	Date
1.	ADDED RETURN #8 TO HALL	NOV/2018
2.	REVISED AS PER ARCHITECTURALS	FEB/2020
3.		

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT. 5 BED
ROSEDALE
4202 - WOB 3785 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
SECOND FLOOR HEATING LAYOUT

Date SEPT/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 79974

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:** 4202- ROSEDALE OPT. 5 BED - WOB - OPT SERV STAIR **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.

February 25, 2020
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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SITE NAME: PINE VALLEY & TESTON | OPT. 5 BED - WOB - OPT SERV STAIR | DATE: Feb-20 | WINTER NATURAL AIR CHANGE RATE 0.407 | HEAT LOSS ΔT °F. 76 | CSA-F280-12
BUILDER: GOLD PARK HOMES | TYPE: 4202- ROSEDALE | GFA: 3700 | LO# 85452 | SUMMER NATURAL AIR CHANGE RATE 0.137 | HEAT GAIN ΔT °F. 13 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			ENS-2			BED-5			ENS-3			ENS-4/5				
EXP. WALL			34			37				12			36			16			0			13			9			6				
CLG. HT.			10			9				9			9			9			9			9			9			9				
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	340			333				108			324			144			0			117			81			54				
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			
NORTH	21.3	16.0	0	0	0	0	0	0		18	383	288	0	0	0	0	0	0	0	0	0	0	0	0	9	192	144	0	0	0		
EAST	21.3	41.6	0	0	0	0	0	0		0	0	0	53	1128	2202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SOUTH	21.3	24.9	0	0	0	0	0	0		0	0	0	0	0	0	38	809	946	0	0	0	18	383	448	0	0	0	0	0	0		
WEST	21.3	41.6	54	1149	2244	18	383	748		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SKYLT.	37.2	101.5	0	0	0	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	4.3	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	0.8	286	1276	215	315	1406	237		90	402	68	271	1209	204	106	473	80	0	0	0	99	442	74	72	321	54	54	241	41		
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.6	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
EXPOSED CLG	1.3	0.6	285	366	167	210	270	123		228	293	134	280	359	165	240	308	141	104	133	61	182	234	107	45	58	26	84	108	49		
NO ATTIC EXPOSED CLG	2.7	1.3	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		
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0		144	367	62	280	714	120	0	0	0	104	265	45	0	0	0	45	115	19	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			2791			2058				1445			3411			1590			399			1058			685			349				
SUB TOTAL HT GAIN					2626			1108				551			2691			1167			106			630			244			90		
LEVEL FACTOR / MULTIPLIER			0.20	0.35		0.20	0.35			0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35			
AIR CHANGE HEAT LOSS				973			718				504			1189			554			139			369			239			122			
AIR CHANGE HEAT GAIN					228			96				48			233			101			9			55			21			8		
DUCT LOSS				0			0				195			460			0			54			0			92			0			
DUCT GAIN					0			0				160			392			0			11			0			26			0		
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	1		240	0		0	0		0		
HEAT GAIN APPLIANCES/LIGHTS					758			0				758			758			758			0			758			0			0		
TOTAL HT LOSS BTU/H				3765			2776				2143			5060			2144			592			1428			1017			470			
TOTAL HT GAIN x 1.3 BTU/H					5319			1565				2283			5608			2945			164			2186			379			127		

ROOM USE			DIN			KT/GT			LAUN			PWD			FOY			MUD			WIC				WOB			BAS		
EXP. WALL			17			100			32			16			59			17			6				43			159		
CLG. HT.			11			11			9			12			11			12			9				10			10		
	FACTORS																													
GRS.WALL AREA	LOSS	GAIN	187			1100			288			192			649			204			54				430			1113		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN
NORTH	21.3	16.0	0	0	0	10	213	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	553	415	0	0	0
EAST	21.3	41.6	0	0	0	0	0	0	41	872	1704	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	21.3	24.9	34	724	847	29	617	722	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST	21.3	41.6	0	0	0	123	2617	5111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98	2085	4072	0	0	0
SKYLT.	37.2	101.5	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	0
DOORS	25.2	4.3	0	0	0	10	252	43	0	0	0	0	0	0	57	1439	242	20	505	85	0	0	0		20	505	85	20	505	85
NET EXPOSED WALL	4.5	0.8	153	683	115	928	4141	697	247	1102	186	192	857	144	592	2642	445	184	821	138	54	241	41		286	1276	215	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	0	0	0		0	0	0	477	1716	289
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	388	498	228	0	0	0	0	0	0	0	0	0	84	108	49		0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	30	82	38	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	84	214	36		0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0			0			0			0			0			0			0							2560		
SLAB ON GRADE HEAT LOSS			0			0			0			0			0			0			0				552					
SUBTOTAL HT LOSS			1406			7841			2555			857			4081			1326			563				4972			4782		
SUB TOTAL HT GAIN					962			6733			2155			144			687			223			126			4787			374	
LEVEL FACTOR / MULTIPLIER			0.30	0.57		0.30	0.57		0.20	0.35		0.30	0.57		0.30	0.57		0.30	0.57		0.20	0.35						0.50	1.51	
AIR CHANGE HEAT LOSS				802			4470			891			488			2326			766			196						14737		
AIR CHANGE HEAT GAIN					83			583			187			13			60			19			11						447	
DUCT LOSS				0			0			0			0			0			0			76						0		
DUCT GAIN					0			0			0			0			0			0			14						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					758			758			758			0			0			0			0			0			758	
TOTAL HT LOSS BTU/H				2208			12311			3446			1345			6407			2082			835			5523			19518	
TOTAL HT GAIN x 1.3 BTU/H					2343			10496			4029			204			971			316			196			6224			2053	

TOTAL HEAT GAIN BTU/H: 47944 | TONS: 4.00 | LOSS DUE TO VENTILATION LOAD BTU/H: 3181 | STRUCTURAL HEAT LOSS: 73071 | TOTAL COMBINED HEAT LOSS BTU/H: 76251

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

OPT. 5 BED - WOB - OPT SERV STAIR
TYPE: 4202- ROSEDALE DATE: Feb-20

GFA: 3700 LO# 85452

HEATING CFM	1525	COOLING CFM	1525	furnace pressure	0.6
TOTAL HEAT LOSS	73,071	TOTAL HEAT GAIN	47,409	furnace filter	0.05
AIR FLOW RATE CFM	20.87	AIR FLOW RATE CFM	32.17	a/c coil pressure	0.2
				available pressure for s/a & r/a	0.35
				plenum pressure s/a	0.18
				max s/a dif press. loss	0.02
				min adjusted pressure s/a	0.16
				r/a pressure	0.17
				r/a grille press. Loss	0.02
				adjusted pressure r/a	0.15

^LENNOX
EL296UH090XE48C 90

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

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

DESIGN CFM = **1525**
CFM @ .6 " E.S.P.

TEMPERATURE RISE 52 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	9	6
R/A	0	0	6	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	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	ENS	BED-2	BED-3	BED-5	ENS-2	LAUN	ENS-3	MBR	BED-4	DIN	KT/GT	KT/GT	KT/GT	KT/GT	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.88	1.39	1.39	2.14	1.69	1.43	0.59	1.72	1.02	1.88	2.14	2.21	3.08	3.08	3.08	3.08	1.35	3.20	2.08	4.17	4.17	4.17	4.17
CFM PER RUN HEAT	39	29	29	45	35	30	12	36	21	39	45	46	64	64	64	64	28	67	43	87	87	87	87
RM GAIN MBH.	2.66	0.78	0.78	2.28	1.87	2.19	0.16	2.01	0.38	2.66	2.95	2.34	2.62	2.62	2.62	2.62	0.20	0.49	0.32	1.38	1.38	1.38	1.38
CFM PER RUN COOLING	86	25	25	73	60	70	5	65	12	86	95	75	84	84	84	84	7	16	10	44	44	44	44
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	62	53	61	60	49	25	48	55	48	67	23	10	43	47	46	57	22	42	59	45	65	13	36
EQUIVALENT LENGTH	160	150	130	190	150	140	190	190	160	180	190	150	130	130	130	130	160	150	110	160	140	120	130
TOTAL EFFECTIVE LENGTH	222	203	191	250	199	165	238	245	208	247	213	160	173	177	176	187	182	192	169	205	205	133	166
ADJUSTED PRESSURE	0.07	0.08	0.09	0.07	0.09	0.1	0.07	0.07	0.08	0.07	0.08	0.11	0.09	0.09	0.09	0.09	0.09	0.09	0.1	0.08	0.08	0.12	0.1
ROUND DUCT SIZE	**6**	4	4	**6**	5	**6**	4	5	4	**6**	**6**	**6**	5	5	5	5	4	5	4	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	199	333	333	229	257	153	138	264	241	199	229	235	470	470	470	470	321	492	493	444	444	444	444
COOLING VELOCITY (ft/min)	438	287	287	372	441	357	57	477	138	438	484	382	617	617	617	617	80	117	115	224	224	224	224
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	A	A	E	E	C	E	D	E	C	E	C	A	A	B	B	E	D	C	A	B	C	D

RUN #	25	26	27	28		30	31	32	33
ROOM NAME	BED-3	LAUN	BAS	FOY		WIC	BED-3	BAS	ENS-4/5
RM LOSS MBH.	1.69	1.72	4.17	3.20		0.84	1.69	4.17	0.47
CFM PER RUN HEAT	35	36	87	67		17	35	87	10
RM GAIN MBH.	1.87	2.01	1.38	0.49		0.20	1.87	1.38	0.13
CFM PER RUN COOLING	60	65	44	16		6	60	44	4
ADJUSTED PRESSURE	0.17	0.17	0.16	0.17		0.17	0.17	0.16	0.17
ACTUAL DUCT LGH.	45	57	33	40		53	58	22	39
EQUIVALENT LENGTH	140	150	180	150		180	160	120	140
TOTAL EFFECTIVE LENGTH	185	207	213	190		233	218	142	179
ADJUSTED PRESSURE	0.09	0.08	0.08	0.09		0.07	0.08	0.11	0.1
ROUND DUCT SIZE	5	5	**6**	5		4	5	**6**	4
HEATING VELOCITY (ft/min)	257	264	444	492		195	257	444	115
COOLING VELOCITY (ft/min)	441	477	224	117		69	441	224	46
OUTLET GRILL SIZE	3X10	3X10	4X10	3X10		3X10	3X10	4X10	3X10
TRUNK	E	D	D	D		C	E	C	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	273	0.08	8.6	8	x	8	614	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	215	0.08	7.9	8	x	8	484	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	886	0.07	13.9	22	x	8	725	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	380	0.07	10.1	12	x	8	570	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	636	0.07	12.2	18	x	8	636	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1165	0.06	16	32	x	8	655
TRUNK Y	430	0.06	11	14	x	8	553
TRUNK Z	920	0.06	14.6	24	x	8	690
DROP	1525	0.06	17.7	24	x	14	654

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	130	130	130	130	360	300	50	50	0	0	0	0	0	0	0	245
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.	61	69	49	53	30	52	60	57	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	165	145	185	185	140	205	205	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	236	234	194	238	215	192	265	262	1	1	1	1	1	1	1	159
ADJUSTED PRESSURE	0.06	0.06	0.08	0.06	0.07	0.08	0.06	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	7	7	6.5	7	9.9	8.9	4.9	4.9	0	0	0	0	0	0	0	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	30	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

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TYPE: 4202- ROSEDALE LO # 85452
SITE NAME: PINE VALLEY & TESTON OPT. 5 BED - WOB - OPT SERV STAIR

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	4	@ 10.6 cfm	42.4	cfm
Kitchen & Bathrooms	6	@ 10.6 cfm	63.6	cfm
Other Rooms	4	@ 10.6 cfm	42.4	cfm
Table 9.32.3.A.		TOTAL	190.8	cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED 9.32.3.4.(1)

1	Bedroom	31.8	cfm
2	Bedroom	47.7	cfm
3	Bedroom	63.6	cfm
4	Bedroom	79.5	cfm
5	Bedroom	95.4	cfm
	TOTAL	**95.4**	**cfm**

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	190.8	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	35.8	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-4/5	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: February-20

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#: 85452 Model: 4202- ROSEDALE Builder: GOLD PARK HOMES Date: 2/25/2020

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1647	10	16470
First	1647	11	18117
Second	2076	9	18684
Third	0	9	0
Fourth	0	9	0
		Total:	53,271.0 ft³
		Total:	1508.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.407
SUMMER NATURAL AIR CHANGE RATE	0.137

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

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

0.407 x 419.02 x 42 °C x 1.2 = 8638 W

= **29473 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.137 x 419.02 x 7 °C x 1.2 = 488 W

= **1665 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 13 °F x 1.08 x 0.25 = **536 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	29,473	9,753	1.511
2	0.3		15,512	0.570
3	0.2		16,904	0.349
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: 4202- ROSEDALE OPT. 5 BED - WOB - OPT SERV STA **BUILDER:** GOLD PARK HOMES
SFQT: 3700 **LO#** 85452 **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)	75

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):	53271.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
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: 68.0 ft	WIDTH: 33.0 ft	EXPOSED PERIMETER:	159.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	43.0 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

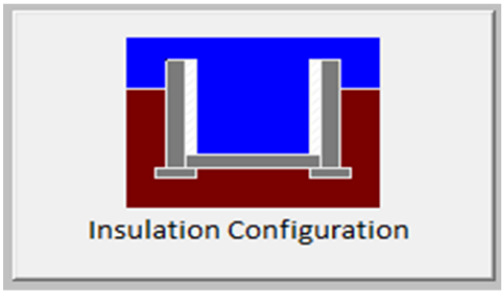
Michael O'Rourke

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):	**4.6**	 Insulation Configuration
Floor Width (m):	**10.1**	
Exposed Perimeter (m):	**48.5**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**1.79**	
Window Area (m^2):	**0.0**	
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):	**750**	

TYPE: 4202- ROSEDALE OPT. 5 BED - WOB - OPT SERV STAIR

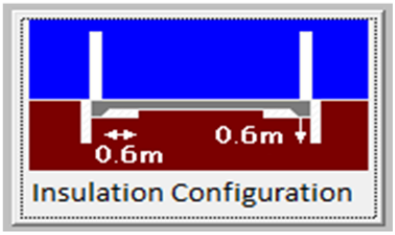
LO# 85452

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		
Length (m):	**1.5**	
Width (m):	**10.1**	
Exposed Perimeter (m):	**13.1**	

Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	

Results	
Heating Load (Watts):	**162**

TYPE: 4202- ROSEDALE OPT. 5 BED - WOB - OPT SERV STAIR

LO# 85452

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):	9.14
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	1508.5
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 2010.8 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):	**0.407**
Cooling Air Leakage Rate (ACH/H):	**0.137**

TYPE: 4202- ROSEDALE OPT. 5 BED - WOB - OPT SERV STAIR

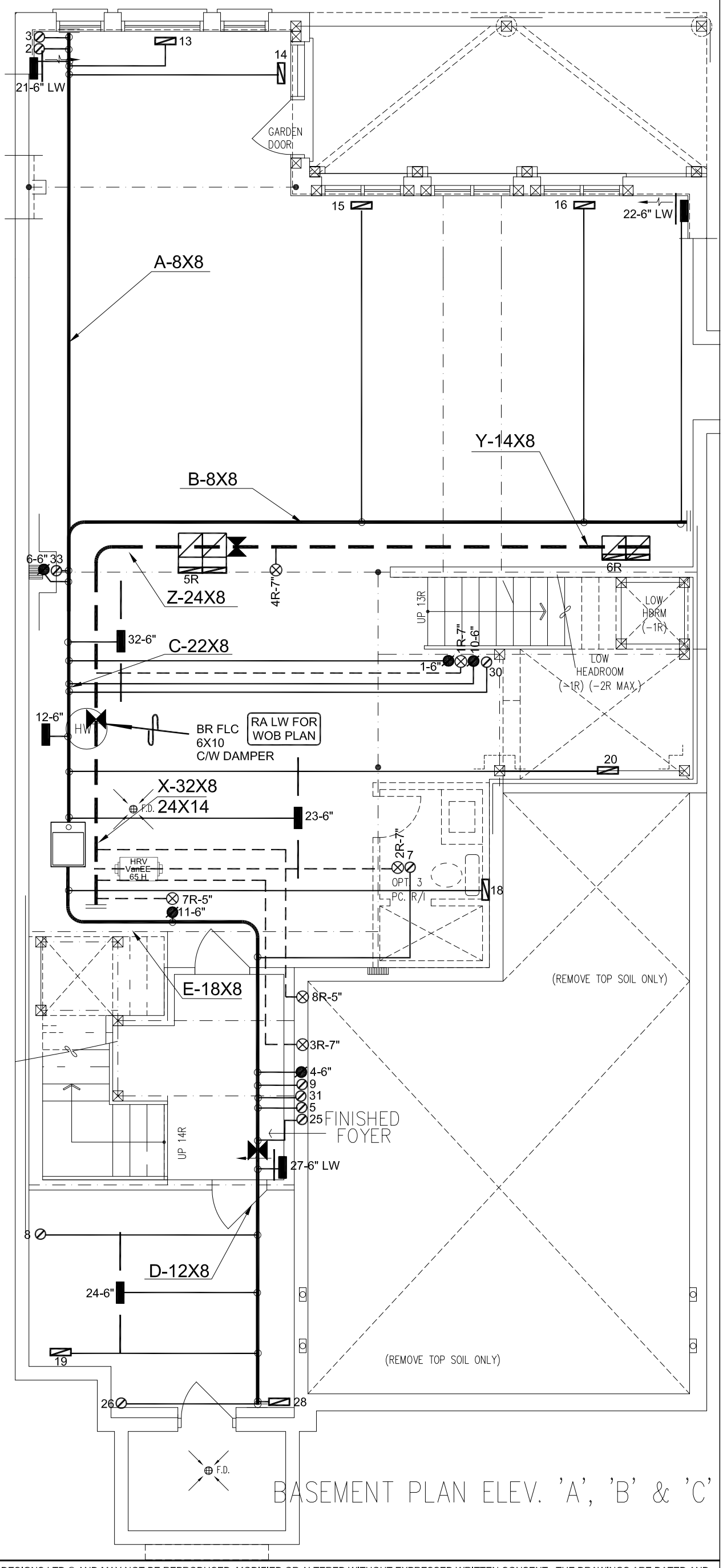
LO# 85452

CSA-F280-12 WOB

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.



BASEMENT PLAN ELEV. 'A', 'B' & 'C'

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		FRA- FLOOR RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE		6" SUPPLY AIR STACK 2nd FLOOR		14"x8" RETURN AIR GRILLE
	DESCRIPTION		DESCRIPTION		DESCRIPTION
	REDUCER		RETURN AIR STACK ABOVE		RETURN AIR STACK 2nd FLOOR

REVISIONS			
No.	Description		Date
1.			
2.			
3.			

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Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT SERV STAIR
ROSEDALE - OPT 5 BED
4202 - WOB 3700 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 76251 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	EL296UH090XE48C
INPUT	88 MBTU/H
OUTPUT	85 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1525 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	16	6	5
1ST FLOOR	9	2	2
BASEMENT	6	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 FEB/2020

Scale 3/16" = 1'-0"

BCIN# 19669

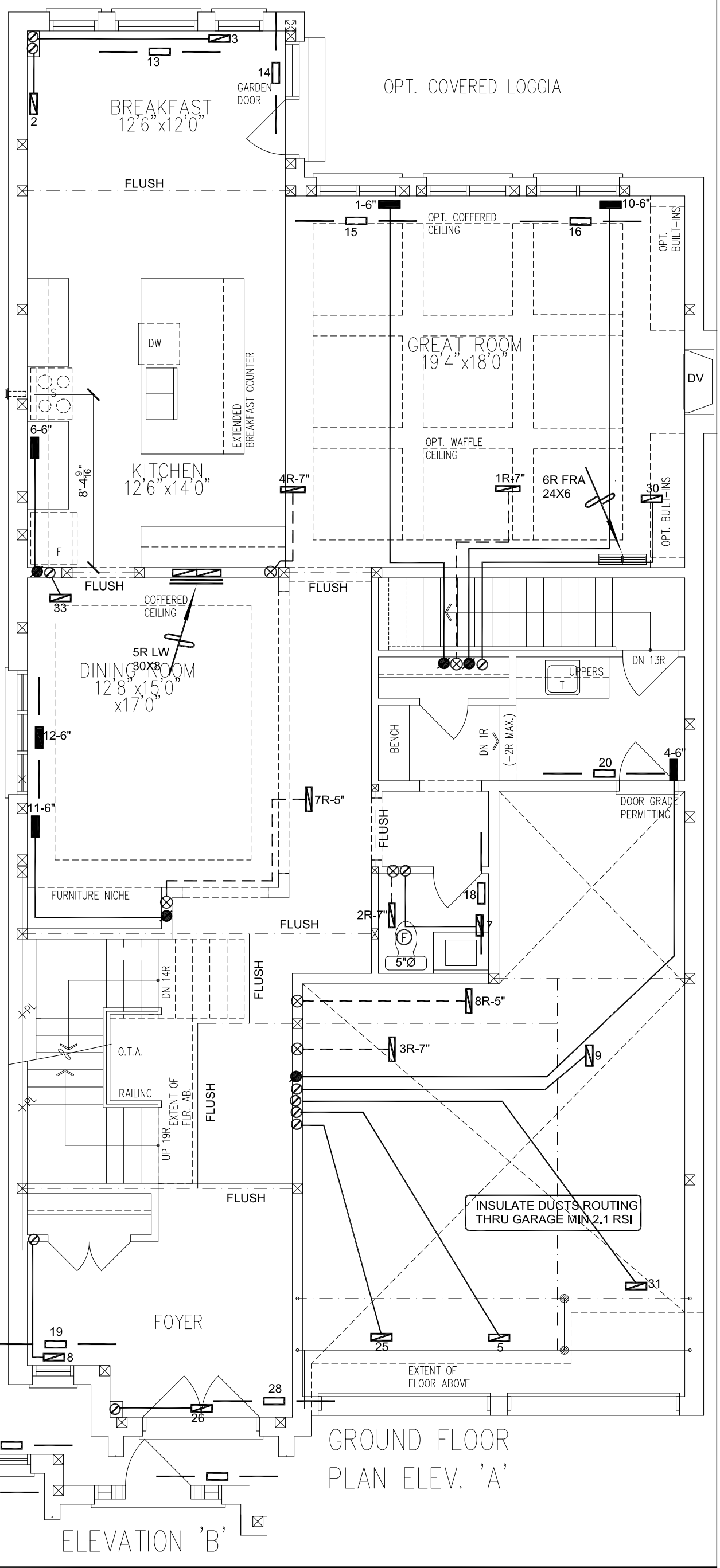
LO# 85452

CSA-F280-12 WOB

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
N	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE
					RETURN AIR STACK ABOVE
					RETURN AIR STACK 2nd FLOOR
					REDUCER

No.	Description	Date
1.		
2.		
3.		

REVISIONS

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT SERV STAIR
ROSEDALE - OPT 5 BED
4202 - WOB 3700 sqft

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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.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date FEB/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 85452

CSA-F280-12 WOB

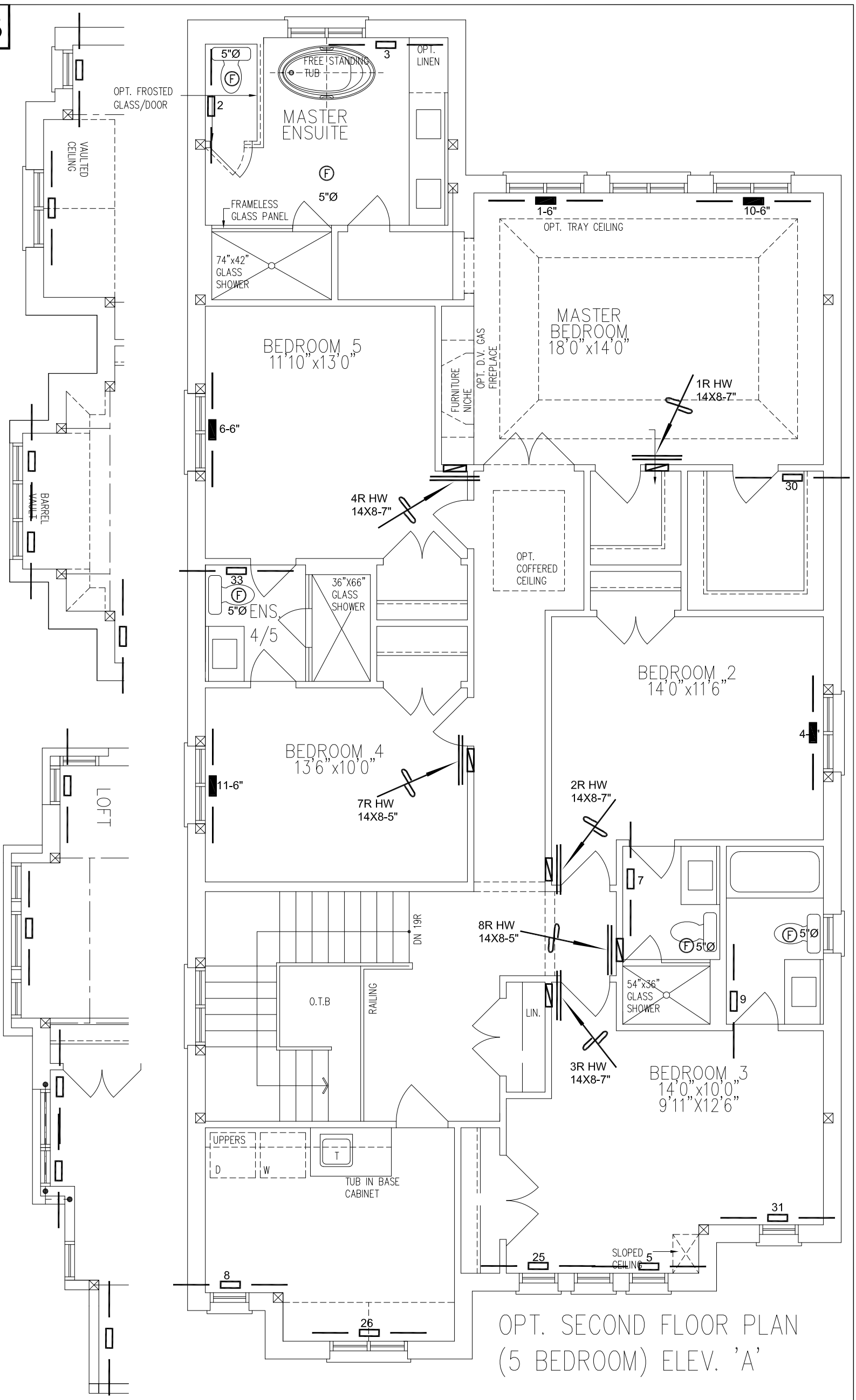
PACKAGE A1

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.

PARTIAL SECOND FLOOR PLAN – ELEVATION 'B'

PARTIAL SECOND FLOOR PLAN – ELEVATION 'C'



OPT. SECOND FLOOR PLAN (5 BEDROOM) ELEV. 'A'

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE
					RETURN AIR STACK ABOVE
					RETURN AIR STACK 2nd FLOOR
					REDUCER

REVISIONS

No.	Description	Date
1.		
2.		
3.		

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT SERV STAIR
ROSEDALE - OPT 5 BED
4202 - WOB 3700 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
SECOND FLOOR HEATING LAYOUT

Date FEB/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 85452

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:** 4202- ROSEDALE OPT SERV STAIR **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.

February 25, 2020
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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Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: PINE VALLEY & TESTON | OPT SERV STAIR | DATE: Feb-20 | WINTER NATURAL AIR CHANGE RATE 0.340 | HEAT LOSS ΔT °F. 76 | CSA-F280-12
BUILDER: GOLD PARK HOMES | TYPE: 4202- ROSEDALE | GFA: 3700 | LO# 85449 | SUMMER NATURAL AIR CHANGE RATE 0.124 | HEAT GAIN ΔT °F. 16 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS			HERS			BED-2			BED-3			BED-4			ENS-2			LOFT			ENS-3			ENS-4		
EXP. WALL			47			34			7			18			36			12			0			38			9			11		
CLG. HT.			10			9			9			9			9			9			9			9			9			9		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	470			306			63			162			324			108			0			342			81			99		
GLAZING			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN	
NORTH	21.3	16.8	0	0	0	0	0	0	0	0	0	18	383	303	0	0	0	0	0	0	0	0	0	0	0	0	9	192	151	0	0	0
EAST	21.3	42.4	0	0	0	0	0	0	0	0	0	0	0	0	53	1128	2247	0	0	0	0	0	0	41	872	1738	0	0	0	0	0	0
SOUTH	21.3	25.7	0	0	0	11	234	283	0	0	0	0	0	0	0	0	0	18	383	463	0	0	0	20	426	515	0	0	0	9	192	232
WEST	21.3	42.4	54	1149	2289	18	383	763	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	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	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	0	0	0
NET EXPOSED WALL	4.5	0.9	416	1856	386	277	1236	257	63	281	58	144	643	134	271	1209	251	90	402	83	0	0	0	281	1254	261	72	321	67	90	402	83
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	480	616	306	168	216	107	98	126	63	324	416	207	280	359	179	168	216	107	45	58	29	276	354	176	45	58	29	66	85	42
NO ATTIC EXPOSED CLG	2.7	1.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	82	41	0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.5	0	0	0	0	0	0	0	0	0	144	367	76	280	714	148	0	0	0	40	102	21	50	128	27	45	115	24	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			3622			2069			407			1809			3411			1000			160			3116			685			678		
SUB TOTAL HT GAIN					2982			1410			121			719			2825			654			50			2757			271			357
LEVEL FACTOR / MULTIPLIER			0.20	0.28		0.20	0.28		0.20	0.28		0.20	0.28		0.20	0.28		0.20	0.28		0.20	0.28		0.20	0.28		0.20	0.28		0.20	0.28	
AIR CHANGE HEAT LOSS				1011			578			114			505			952			279			45			870			191			189		
AIR CHANGE HEAT GAIN					326			154			13			79			309			72			5			302			30			39
DUCT LOSS				0			0			0			231			436			0			20			399			88			0		
DUCT GAIN					0			0			0			184			418			0			6			386			30			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					806			0			0			806			806			806			0			806			0			0
TOTAL HT LOSS BTU/H				4633			2647			521			2545			4799			1280			225			4385			964			867		
TOTAL HT GAIN x 1.3 BTU/H					5971			2034			175			2636			5977			2302			79			5526			429			515

ROOM USE			DIN				KT/GT				LAUN			PWD			FOY			MUD			HIS				LOD			BAS		
EXP. WALL			17				100				0			16			59			17			6				43			202		
CLG. HT.			11				11				9			12			11			12			9				10			10		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	187				1100				0			192			649			204			54				430			1672		
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		10	213	168		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EAST	21.3	42.4	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
SOUTH	21.3	25.7	34	724	875		29	617	746		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST	21.3	42.4	0	0	0		123	2617	5214		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	426	848	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	0
DOORS	25.2	5.2	0	0	0		10	252	52		0	0	0	0	0	0	57	1439	299	20	505	105	0	0	0		0	0	0	20	505	105
NET EXPOSED WALL	4.5	0.9	153	683	142		928	4141	861		0	0	0	192	857	178	592	2642	549	184	821	171	54	241	50		0	0	0	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		238	856	178	348	1252	260
EXPOSED CLG	1.3	0.6	0	0	0		0	0	0		96	123	61	0	0	0	0	0	0	0	0	0	84	108	54		0	0	0	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	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	84	214	45		0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0				0				0			0			0			0			0							6921		
SLAB ON GRADE HEAT LOSS			0				0				0			0			0			0			0				0					
SUBTOTAL HT LOSS			1406				7841				123			857			4081			1326			563				1282			8678		
SUB TOTAL HT GAIN					1017				7042				61			178			848			276			148				1026			365
LEVEL FACTOR / MULTIPLIER			0.30	0.48			0.30	0.48			0.20	0.28		0.30	0.48		0.30	0.48		0.30	0.48		0.20	0.28						0.50	1.24		
AIR CHANGE HEAT LOSS				670				3736				34			408			1944			632			157							12316		
AIR CHANGE HEAT GAIN					111				771				7			19			93			30			16							152
DUCT LOSS				0				0				0			0			0			0			72							0		
DUCT GAIN					0				0				0			0			0			0			16							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					806				806				806			0			0			806			0				0			806
TOTAL HT LOSS BTU/H				2076				11577				158			1265			6025			1958			792				1282			20994		
TOTAL HT GAIN x 1.3 BTU/H					2514				11204				1136			257			1224			1445			235				1334			1720

TOTAL HEAT GAIN BTU/H: 47375 TONS: 3.95 LOSS DUE TO VENTILATION LOAD BTU/H: 3181 STRUCTURAL HEAT LOSS: 68993 TOTAL COMBINED HEAT LOSS BTU/H: 72174

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 — OPT SERV STAIR
BUILDER: GOLD PARK HOMES — TYPE: 4202- ROSEDALE — DATE: Feb-20 — GFA: 3700 — LO# 85449

HEATING CFM	1525		COOLING CFM	1525			furnace pressure	0.6																
TOTAL HEAT LOSS	68,993		TOTAL HEAT GAIN	46,714			furnace filter	0.05										^LENNOX			AFUE = 96 %			
AIR FLOW RATE CFM	22.1		AIR FLOW RATE CFM	32.65			a/c coil pressure	0.2										EL296UH090XE48C	90		INPUT (BTU/H) = 88,000			
							available pressure											FAN SPEED			OUTPUT (BTU/H) = **85,000**			
							for s/a & r/a	0.35										LOW	0					
																		MEDLOW	0		DESIGN CFM = **1525**			
							plenum pressure s/a	0.18		r/a pressure	0.17							MEDIUM	1105		CFM @ .6 " E.S.P.			
							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		TEMPERATURE RISE 52 °F			

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	17	9	6
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	ENS	BED-2	BED-3	BED-4	ENS-2	LOFT	ENS-3	MBR	ENS-4	DIN	KT/GT	KT/GT	KT/GT	KT/GT	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.32	1.32	1.32	2.55	1.60	1.28	0.22	2.19	0.96	2.32	0.87	2.08	2.89	2.89	2.89	2.89	0.16	1.27	3.01	1.96	3.71	3.71	3.71	3.71
CFM PER RUN HEAT	51	29	29	56	35	28	5	48	21	51	19	46	64	64	64	64	3	28	67	43	82	82	82	82
RM GAIN MBH.	2.99	1.02	1.02	2.64	1.99	2.30	0.08	2.76	0.43	2.99	0.52	2.51	2.80	2.80	2.80	2.80	1.14	0.26	0.61	1.44	0.51	0.51	0.51	0.51
CFM PER RUN COOLING	97	33	33	86	65	75	3	90	14	97	17	82	91	91	91	91	37	8	20	47	17	17	17	17
ADJUSTED PRESSURE	0.16	0.17	0.17	0.16	0.17	0.17	0.17	0.16	0.17	0.16	0.17	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	62	53	61	60	49	25	48	55	48	67	39	10	43	47	46	57	52	22	42	29	45	50	13	36
EQUIVALENT LENGTH	160	150	130	190	150	140	190	190	160	180	140	150	130	130	130	130	190	160	150	110	120	110	120	130
TOTAL EFFECTIVE LENGTH	222	203	191	250	199	165	238	245	208	247	179	160	173	177	176	187	242	182	192	139	165	160	133	166
ADJUSTED PRESSURE	0.07	0.08	0.09	0.06	0.09	0.1	0.07	0.07	0.08	0.07	0.1	0.1	0.09	0.09	0.09	0.09	0.07	0.09	0.09	0.12	0.1	0.1	0.12	0.1
ROUND DUCT SIZE	**6**	4	4	**6**	5	5	4	**6**	4	**6**	4	5	**6**	**6**	**6**	**6**	4	4	5	4	5	5	5	5
HEATING VELOCITY (ft/min)	260	333	333	286	257	206	57	245	241	260	218	338	326	326	326	326	34	321	492	493	602	602	602	602
COOLING VELOCITY (ft/min)	495	379	379	438	477	551	34	459	161	495	195	602	464	464	464	464	424	92	147	539	125	125	125	125
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	C	A	A	E	E	C	E	D	E	C	C	C	A	A	B	B	B	E	D	C	A	B	C	D

RUN #	25	26	27	28	29	30	31	32
ROOM NAME	BED-3	LOFT	BAS	FOY	HERS	HIS	BED-3	BAS
RM LOSS MBH.	1.60	2.19	3.71	3.01	0.52	0.79	1.60	3.71
CFM PER RUN HEAT	35	48	82	67	12	18	35	82
RM GAIN MBH.	1.99	2.76	0.51	0.61	0.17	0.24	1.99	0.51
CFM PER RUN COOLING	65	90	17	20	6	8	65	17
ADJUSTED PRESSURE	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.16
ACTUAL DUCT LGH.	45	57	33	40	50	53	58	22
EQUIVALENT LENGTH	140	150	180	150	180	180	160	120
TOTAL EFFECTIVE LENGTH	185	207	213	190	230	233	218	142
ADJUSTED PRESSURE	0.09	0.08	0.08	0.09	0.07	0.07	0.08	0.11
ROUND DUCT SIZE	5	**6**	5	5	4	4	5	5
HEATING VELOCITY (ft/min)	257	245	602	492	138	207	257	602
COOLING VELOCITY (ft/min)	477	459	125	147	69	92	477	125
OUTLET GRILL SIZE	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	E	D	D	D	B	C	E	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	268	0.08	8.6	8	x	8	603	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	225	0.07	8.3	8	x	8	506	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	913	0.07	14	22	x	8	747	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	394	0.07	10.2	12	x	8	591	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	609	0.06	12.5	18	x	8	609	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1525	0.06	17.7	32	x	10	686
TRUNK Y	430	0.06	11	14	x	8	553
TRUNK Z	925	0.06	14.6	24	x	8	694
DROP	1525	0.06	17.7	24	x	14	654

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	130	125	130	130	365	300	130	0	0	0	0	0	0	0	0	215
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.	61	69	49	53	30	52	56	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	165	145	185	185	140	150	0	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	236	234	194	238	215	192	206	1	1	1	1	1	1	1	1	159
ADJUSTED PRESSURE	0.06	0.06	0.08	0.06	0.07	0.08	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	7	6.9	6.5	7	9.9	8.9	6.8	0	0	0	0	0	0	0	0	7.7
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	30	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.

Michael O'Rourke — INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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

TYPE: 4202- ROSEDALE LO # 85449
SITE NAME: PINE VALLEY & TESTON OPT SERV STAIR

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	8	@ 10.6 cfm	84.8	cfm
Table 9.32.3.A.		TOTAL	222.6	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	222.6	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	67.6	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: February-20

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

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 85449 Model: 4202- ROSEDALE Builder: GOLD PARK HOMES Date: 2/25/2020

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1647	10	16470
First	1647	11	18117
Second	2076	9	18684
Third	0	9	0
Fourth	0	9	0
		Total:	53,271.0 ft³
		Total:	1508.5 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 419.02 x 42 °C x 1.2 = 7219 W

= **24633 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 419.02 x 9 °C x 1.2 = 547 W

= **1868 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	24,633	9,960	1.237
2	0.3		15,512	0.476
3	0.2		17,643	0.279
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: 4202- ROSEDALE OPT SERV STAIR **BUILDER:** GOLD PARK HOMES
SFQT: 3700 **LO#** 85449 **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):	53271.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 68.0 ft	WIDTH: 33.0 ft	EXPOSED PERIMETER:	202.0 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

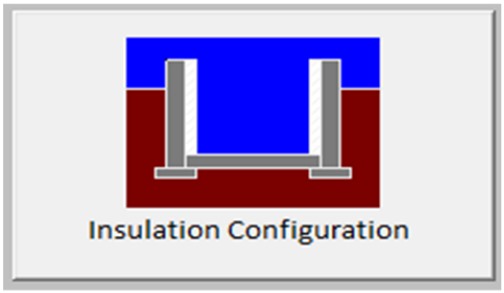
Michael O'Rourke

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):	**20.7**	 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):	**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):	**2028**	

TYPE: 4202- ROSEDALE OPT SERV STAIR
LO# 85449

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):	1508.5
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 2010.8 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: 4202- ROSEDALE OPT SERV STAIR

LO# 85449

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

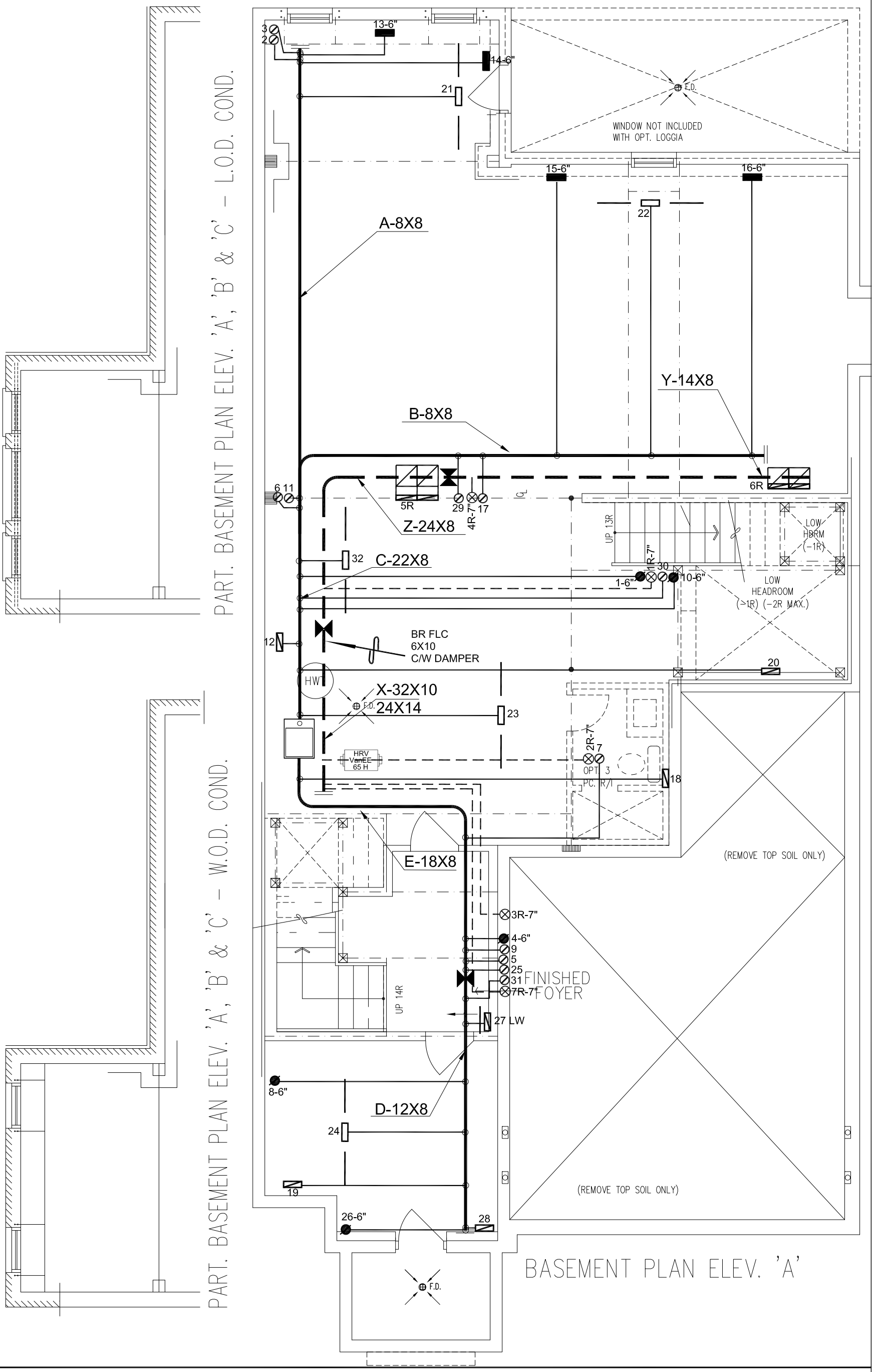
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		6" SUPPLY AIR STACK 2nd FLOOR		30"x8" RETURN AIR GRILLE
	FRA- FLOOR RETURN AIR GRILLE		REDUCER		RETURN AIR STACK ABOVE		RETURN AIR STACK 2nd FLOOR

No.	Description	Date
1.		
2.		
3.		

REVISIONS

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

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



BASEMENT PLAN ELEV. 'A'

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT SERV STAIR
ROSEDALE
4202 3700 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 72174 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	EL296UH090XE48C
INPUT	88 MBTU/H
OUTPUT	85 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1525 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	17	5	6
1ST FLOOR	9	2	2
BASEMENT	6	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 FEB/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 85449

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.

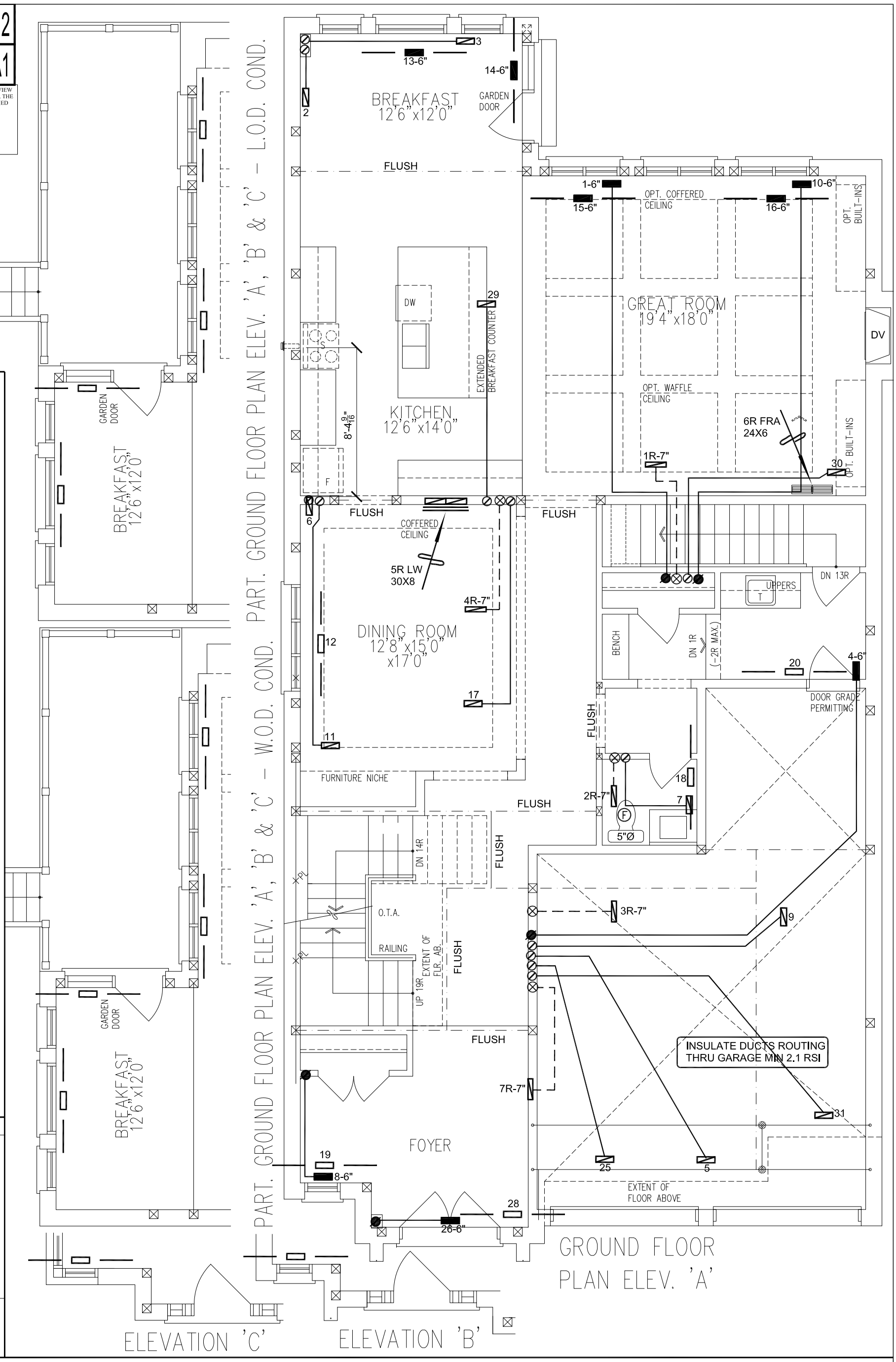
HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE
	SUPPLY AIR STACK 2nd FLOOR				

SYMBOL	DESCRIPTION
	RETURN AIR STACK ABOVE
	RETURN AIR STACK 2nd FLOOR
	REDUCER

REVISIONS

No.	Description	Date
1.		
2.		
3.		



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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT SERV STAIR
ROSEDALE
4202 3700 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 FEB/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 85449

CSA-F280-12

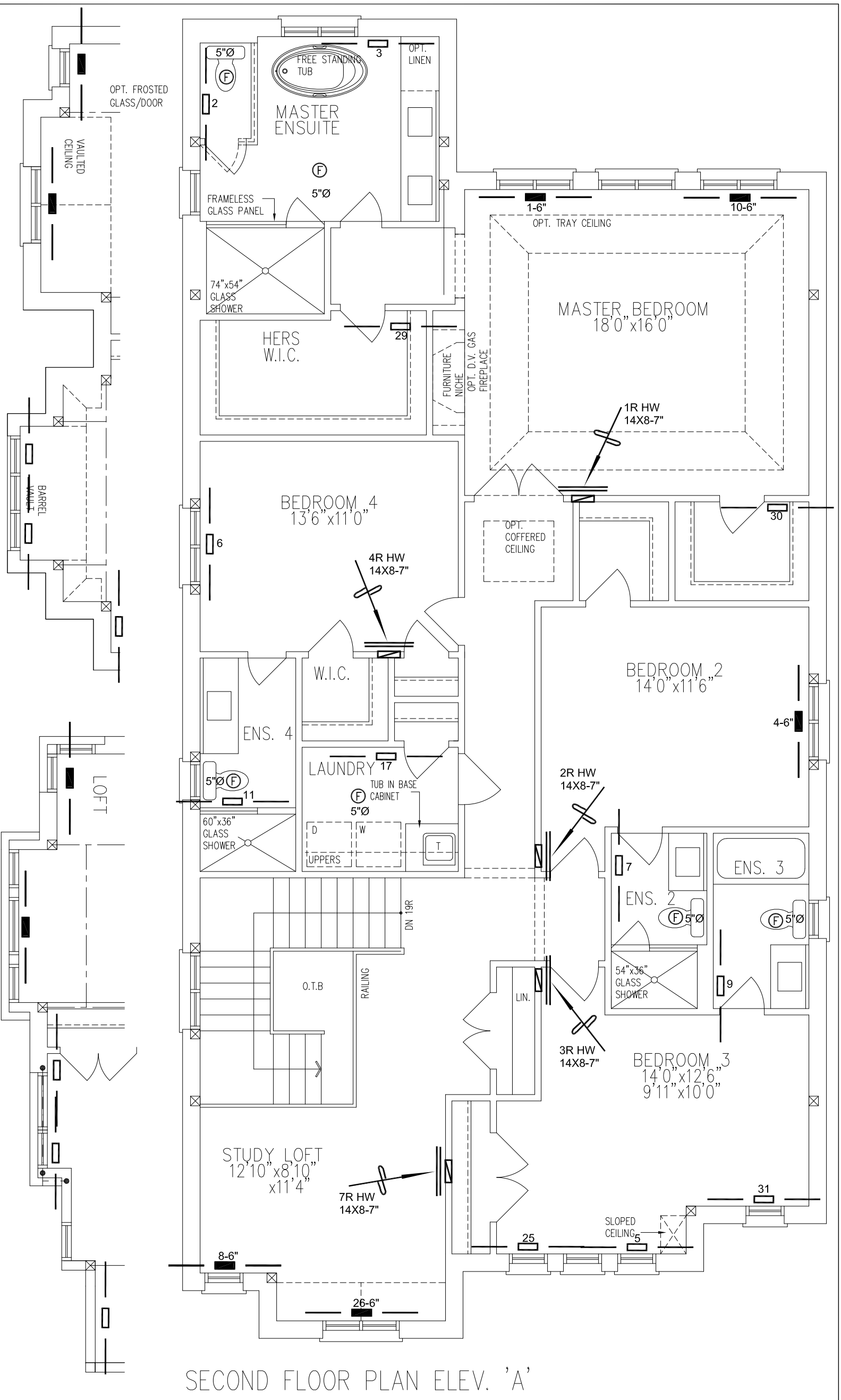
PACKAGE A1

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.

PARTIAL SECOND FLOOR PLAN – ELEVATION 'B'

PARTIAL SECOND FLOOR PLAN – ELEVATION 'C'



SECOND FLOOR PLAN ELEV. 'A'

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE
	SUPPLY AIR BOOT ABOVE		RETURN AIR STACK ABOVE		RETURN AIR STACK 2nd FLOOR
					REDUCER

REVISIONS

No.	Description	Date
1.		
2.		
3.		

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Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT SERV STAIR
ROSEDALE
4202 3700 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

SECOND FLOOR HEATING LAYOUT

Date FEB/2020

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 85449

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:** 4202- ROSEDALE WOB **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.

September 11, 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.

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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 & TESTON — WOB — DATE: Sep-18 — WINTER NATURAL AIR CHANGE RATE 0.407 — HEAT LOSS ΔT °F. 76 — CSA-F280-12
BUILDER: GOLD PARK HOMES — TYPE: 4202- ROSEDALE — GFA: 3592 — LO# 79973 — SUMMER NATURAL AIR CHANGE RATE 0.137 — HEAT GAIN ΔT °F. 13 — SB-12 PACKAGE A1

ROOM USE			MBR			ENS			HERS			BED-2			BED-3			BED-4			ENS-2			LOFT			ENS-3			ENS-4		
EXP. WALL			47			34			7			18			36			12			0			38			9			11		
CLG. HT.			10			9			9			9			9			9			9			9			9			9		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	470			306			63			162			324			108			0			342			81			99		
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	18	383	288	0	0	0	0	0	0	0	0	0	0	0	0	9	192	144	0	0	0
EAST	21.3	41.6	0	0	0	0	0	0	0	0	0	0	0	0	53	1128	2202	0	0	0	0	0	0	41	872	1704	0	0	0	0	0	0
SOUTH	21.3	24.9	0	0	0	11	234	274	0	0	0	0	0	0	0	0	0	18	383	448	0	0	0	20	426	498	0	0	0	9	192	224
WEST	21.3	41.6	54	1149	2244	18	383	748	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	101.5	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	0	0	0
DOORS	25.2	4.3	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	0	0	0
NET EXPOSED WALL	4.5	0.8	416	1856	313	277	1236	208	63	281	47	144	643	108	271	1209	204	90	402	68	0	0	0	281	1254	211	72	321	54	90	402	68
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	480	616	282	168	216	99	98	126	58	324	416	190	280	369	165	168	216	99	45	58	26	276	354	162	45	58	26	66	85	39
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	82	38	0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	144	367	62	280	714	120	0	0	0	40	102	17	50	128	21	45	115	19	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			3622			2069			407			1809			3411			1000			160			3116			685			678		
SUB TOTAL HT GAIN					2839			1329			105			648			2691			615			44			2634			244			331
LEVEL FACTOR / MULTIPLIER			0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32	
AIR CHANGE HEAT LOSS				1159			662			130			579			1091			320			51			997			219			217		
AIR CHANGE HEAT GAIN					237			111			9			54			224			51			4			220			20			28
DUCT LOSS				0			0			0			239			450			0			21			411			90			0		
DUCT GAIN					0			0			0			160			381			0			5			351			26			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					655			0			0			655			655			655			0			655			0			0
TOTAL HT LOSS BTU/H			4781			2731			537			2626			4952			1320			232			4525			995			895		
TOTAL HT GAIN x 1.3 BTU/H					5473			1871			148			2284			5448			2029			68			5018			377			486

ROOM USE			DIN				KT/GT				LAUN			PWD			FOY			MUD			HIS				WOB			BAS		
EXP. WALL			17				100				0			15			59			15			6				43			159		
CLG. HT.			11				11				9			12			11			12			9				10			10		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	187				1100				0			180			649			180			54				430			1113		
GLAZING				LOSS	GAIN			LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN
NORTH	21.3	16.0	0	0	0		10	213	160		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		26	553	415	0	0	0
EAST	21.3	41.6	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
SOUTH	21.3	24.9	34	724	847		29	617	722		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
WEST	21.3	41.6	0	0	0		123	2617	5111		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		98	2085	4072	0	0	0
SKYLT.	37.2	101.5	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	4.3	0	0	0		10	252	43		0	0	0	0	0	0	57	1439	242	20	505	85	0	0	0		20	505	85	20	505	85
NET EXPOSED WALL	4.5	0.8	153	683	115		928	4141	697		0	0	0	180	803	135	592	2642	445	160	714	120	54	241	41		286	1276	215	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	0	0	0		0	0	0	477	1716	289
EXPOSED CLG	1.3	0.6	0	0	0		0	0	0		96	123	56	0	0	0	0	0	0	0	0	0	84	108	49		0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.3	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
EXPOSED FLOOR	2.6	0.4	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	84	214	36		0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0				0				0			0			0			0			0							2560		
SLAB ON GRADE HEAT LOSS			0				0				0			0			0			0			0				552					
SUBTOTAL HT LOSS			1406				7841				123			803			4081			1219			563				4972			4782		
SUB TOTAL HT GAIN					962				6733				56			135			687			205			126			4787			374
LEVEL FACTOR / MULTIPLIER			0.30	0.55			0.30	0.55			0.20	0.32		0.30	0.55		0.30	0.55		0.30	0.55		0.20	0.32						0.50	1.45	
AIR CHANGE HEAT LOSS			776				4326				39			443			2252			673			180							14115		
AIR CHANGE HEAT GAIN					80				582				5			11			57			17			11							431
DUCT LOSS			0				0				0			0			0			0			74							0		
DUCT GAIN					0				0				0			0			0			14									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					655				655				655			0			0			655			0							655
TOTAL HT LOSS BTU/H			2182				12167				163			1246			6333			1892			818				5523			18897		
TOTAL HT GAIN x 1.3 BTU/H					2206				10334				931			191			968			1140			195			6224			1897

TOTAL HEAT GAIN BTU/H: 47803 — TONS: 3.98 — LOSS DUE TO VENTILATION LOAD BTU/H: 3181 — STRUCTURAL HEAT LOSS: 72815 — TOTAL COMBINED HEAT LOSS BTU/H: 75995

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INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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

WOB
TYPE: 4202- ROSEDALE
DATE: Sep-18
GFA: 3592 LO# 79973

HEATING CFM	1525	COOLING CFM	1525
TOTAL HEAT LOSS	72,815	TOTAL HEAT GAIN	47,267
AIR FLOW RATE CFM	20.94	AIR FLOW RATE CFM	32.26

furnace pressure	0.6
furnace filter	0.05
a/c coil pressure	0.2
available pressure for s/a & r/a	0.35
plenum pressure s/a	0.18
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
FAN SPEED
LOW 0
MEDLOW 0
MEDIUM 1105
MEDIUM HIGH 1255
HIGH 1525

AFUE = 96 %
INPUT (BTU/H) = 88,000
OUTPUT (BTU/H) = 85,000
DESIGN CFM = 1525
CFM @ .6 " E.S.P.
TEMPERATURE RISE 52 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	17	9	6
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	ENS	BED-2	BED-3	BED-4	ENS-2	LOFT	ENS-3	MBR	ENS-4	DIN	KT/GT	KT/GT	KT/GT	KT/GT	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.39	1.37	1.37	2.63	1.65	1.32	0.23	2.26	1.00	2.39	0.89	2.18	3.04	3.04	3.04	3.04	0.16	1.25	3.17	1.89	4.07	4.07	4.07	4.07
CFM PER RUN HEAT	50	29	29	55	35	28	5	47	21	50	19	46	64	64	64	64	3	26	66	40	85	85	85	85
RM GAIN MBH.	2.74	0.94	0.94	2.28	1.82	2.03	0.07	2.51	0.38	2.74	0.47	2.21	2.58	2.58	2.58	2.58	0.93	0.19	0.48	1.14	1.35	1.35	1.35	1.35
CFM PER RUN COOLING	88	30	30	74	59	65	2	81	12	88	15	71	83	83	83	83	30	6	16	37	44	44	44	44
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.17	0.17	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	69	53	61	60	49	25	48	55	48	73	39	10	43	47	46	57	52	22	42	24	45	65	13	36
EQUIVALENT LENGTH	160	150	130	190	150	140	190	190	160	140	140	150	130	130	130	130	190	160	150	110	170	140	120	130
TOTAL EFFECTIVE LENGTH	229	203	191	250	199	165	238	245	208	213	179	160	173	177	176	187	242	182	192	134	215	205	133	166
ADJUSTED PRESSURE	0.07	0.08	0.09	0.07	0.09	0.1	0.07	0.07	0.08	0.08	0.1	0.11	0.09	0.09	0.09	0.09	0.07	0.09	0.09	0.13	0.08	0.08	0.12	0.1
ROUND DUCT SIZE	6	4	4	5	5	5	4	6	4	6	4	5	5	5	5	5	4	4	5	4	6	6	5	5
HEATING VELOCITY (ft/min)	255	333	333	404	257	206	57	240	241	255	218	338	470	470	470	470	34	298	485	459	433	433	624	624
COOLING VELOCITY (ft/min)	449	344	344	543	433	477	23	413	138	449	172	521	609	609	609	609	344	69	117	424	224	224	323	323
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10
TRUNK	B	A	A	E	E	C	E	D	E	B	C	C	A	A	B	B	B	E	D	C	A	B	C	D

RUN #	25	26	27	28	29	30	31	32
ROOM NAME	BED-3	LOFT	BAS	FOY	HERS	HIS	BED-3	BAS
RM LOSS MBH.	1.65	2.26	4.07	3.17	0.54	0.82	1.65	4.07
CFM PER RUN HEAT	35	47	85	66	11	17	35	85
RM GAIN MBH.	1.82	2.51	1.35	0.48	0.15	0.20	1.82	1.35
CFM PER RUN COOLING	59	81	44	16	5	6	59	44
ADJUSTED PRESSURE	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.16
ACTUAL DUCT LGH.	45	57	33	40	50	60	58	22
EQUIVALENT LENGTH	140	150	180	150	180	150	160	120
TOTAL EFFECTIVE LENGTH	185	207	213	190	230	210	218	142
ADJUSTED PRESSURE	0.09	0.08	0.08	0.09	0.07	0.08	0.08	0.11
ROUND DUCT SIZE	5	5	6	5	4	4	5	5
HEATING VELOCITY (ft/min)	257	345	433	485	126	195	257	624
COOLING VELOCITY (ft/min)	433	595	224	117	57	69	433	323
OUTLET GRILL SIZE	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10
TRUNK	E	D	D	D	B	B	E	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	271	0.08	8.6	8	x	8	610	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	344	0.07	9.7	12	x	8	516	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	918	0.07	14	22	x	8	751	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	396	0.07	10.2	12	x	8	594	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	608	0.07	12	16	x	8	684	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1525	0.06	17.7	32	x	10	686
TRUNK Y	430	0.06	11	14	x	8	553
TRUNK Z	925	0.06	14.6	24	x	8	694
DROP	1525	0.06	17.7	24	x	14	654

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	130	125	130	130	365	300	130	0	0	0	0	0	0	0	0	215
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.	62	69	49	53	30	52	56	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	155	165	145	185	185	140	150	0	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	217	234	194	238	215	192	206	1	1	1	1	1	1	1	1	159
ADJUSTED PRESSURE	0.07	0.06	0.08	0.06	0.07	0.08	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6.8	6.9	6.5	7	9.9	8.9	6.8	0	0	0	0	0	0	0	0	7.7
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	30	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.

Michael O'Rourke. INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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TYPE: 4202- ROSEDALE LO # 79973
SITE NAME: PINE VALLEY & TESTON WOB

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	8	@ 10.6 cfm	84.8	cfm
Table 9.32.3.A.		TOTAL	222.6	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	222.6	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	67.6	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: September-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

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 79973 Model: 4202- ROSEDALE Builder: GOLD PARK HOMES Date: 9/11/2018

Volume Calculation

House Volume

Level	Floor Area (ft^2)	Floor Height (ft)	Volume (ft^3)
Bsmt	1540	10	15400
First	1540	11	16940
Second	2076	9	18684
Third	0	9	0
Fourth	0	9	0
		Total:	51,024.0 ft^3
		Total:	1444.8 m^3

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.407
SUMMER NATURAL AIR CHANGE RATE	0.137

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

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

0.407 x 401.34 x 42 °C x 1.2 = **8274 W**

= **28230 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.137 x 401.34 x 7 °C x 1.2 = **468 W**

= **1595 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 13 °F x 1.08 x 0.25 = **536 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	28,230	9,753	1.447
2	0.3		15,351	0.552
3	0.2		17,643	0.320
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: 4202- ROSEDALE WOB **BUILDER:** GOLD PARK HOMES
SFQT: 3592 **LO#** 79973 **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)	75

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):	51024.0	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: 68.0 ft WIDTH:	33.0 ft	EXPOSED PERIMETER:	159.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	43.0 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

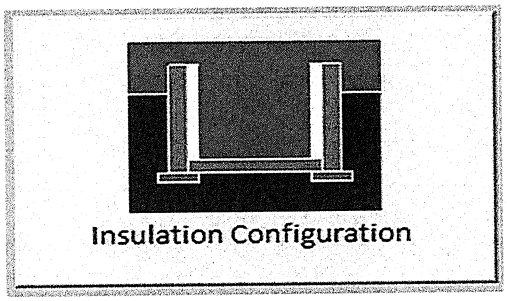
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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):	4.6	
Floor Width (m):	10.1	
Exposed Perimeter (m):	48.5	
Wall Height (m):	3.0	
Depth Below Grade (m):	1.79	
Window Area (m^2):	0.0	
Door Area (m^2):	1.9	


Insulation Configuration

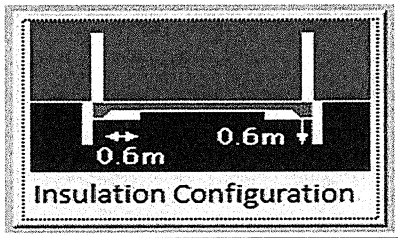
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	**750**	

TYPE: 4202- ROSEDALE WOB
LO# 79973

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		
Length (m):	1.5	 Insulation Configuration
Width (m):	10.1	
Exposed Perimeter (m):	13.1	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):	**162**	

TYPE: 4202- ROSEDALE WOB

LO# 79973

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):	9.14	
Building Configuration		
Type:	Detached	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m^3):	1444.8	
Air Leakage/Ventilation		
Air Tightness Type:	Present (1961-) (3.57 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1926.0 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):	**0.407**	
Cooling Air Leakage Rate (ACH/H):	**0.137**	

TYPE: 4202- ROSEDALE WOB

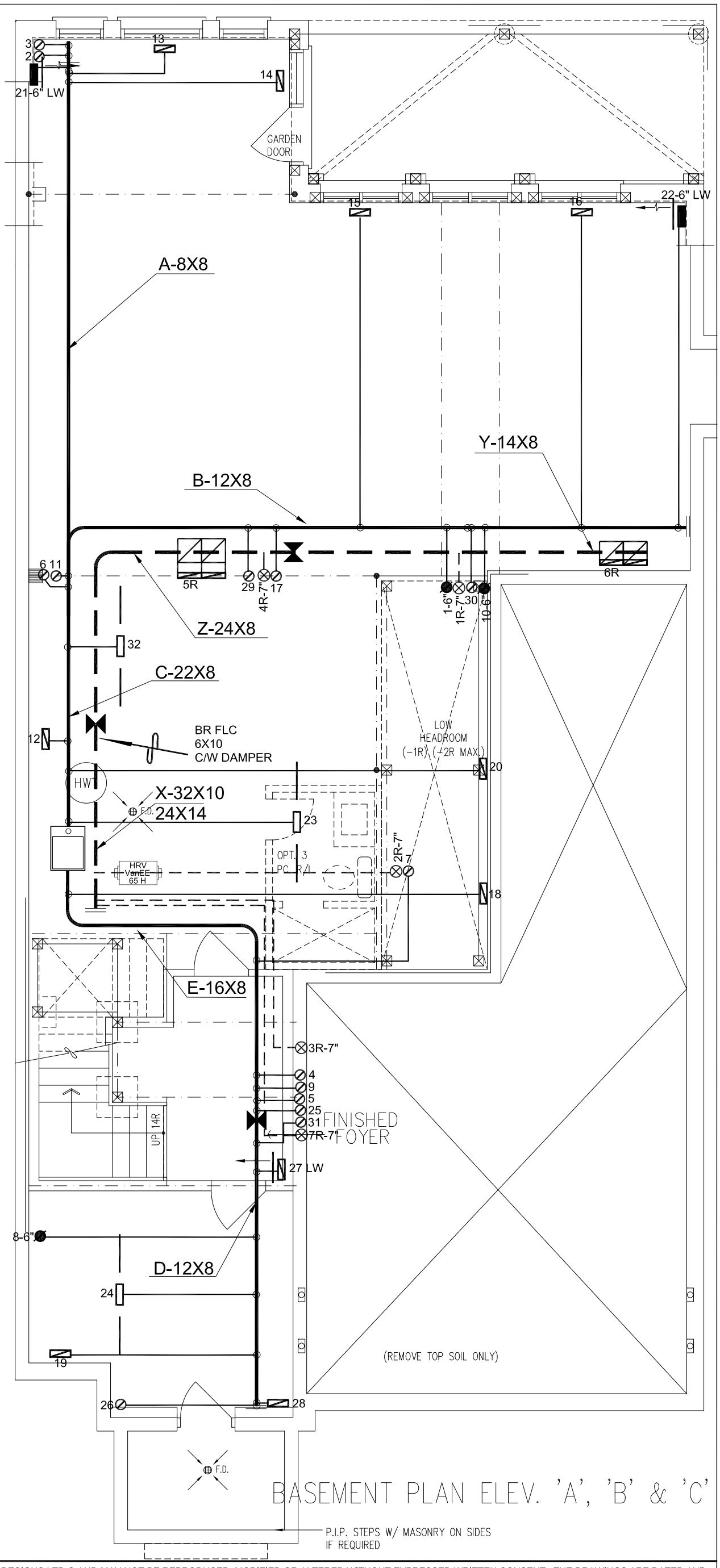
LO# 79973

CSA-F280-12 WOB

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
	SUPPLY AIR BOOT ABOVE		SUPPLY AIR GRILLE		SUPPLY AIR GRILLE 6" BOOT
	SUPPLY AIR STACK FROM 2nd FLOOR		6" SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR
	FRA- FLOOR RETURN AIR GRILLE		14"x8" RETURN AIR GRILLE		30"x8" RETURN AIR GRILLE
	REDUCER		RETURN AIR STACK ABOVE		RETURN AIR STACK 2nd FLOOR

REVISIONS

No.	Description	Date
1.	REVISED AS PER ARCHITECTURALS	FEB/2020
2.		
3.		

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO

ROSEDALE - WOB
4202 3592 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services

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

HEAT LOSS 75995 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	EL296UH090XE48C
INPUT	88 MBTU/H
OUTPUT	85 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1525 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	17	5	6
1ST FLOOR	9	2	2
BASEMENT	6	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 SEPT/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 79973

CSA-F280-12 **WOB**

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.

GROUND FLOOR PLAN ELEV. 'A', 'B' & 'C' – L.O.D. COND. PART. GROUND FLOOR PLAN ELEV. 'A', 'B' & 'C' – W.O.D. COND.

BREAKFAST 12'6"x12'0"
GARDEN DOOR
FLUSH
BREAKFAST 12'6"x12'0"
GARDEN DOOR
BREAKFAST 12'6"x12'0"
GARDEN DOOR
OPT. COVERED LOGGIA
OPT. WAFFLE CEILING
OPT. COFFERED CEILING
OPT. BUILT-INS
D.V. GAS FIREPLACE
OPT. BUILT-INS
GREAT ROOM 19'4"x18'0"
KITCHEN 12'6"x14'0"
EXTENDED BREAKFAST COUNTER
DW
8'-4 9/16"
F
FLUSH
FLUSH
FLUSH
COFFERED CEILING
5R LW 30X8
4R-7"
DINING ROOM 12'8"x15'0" x17'0"
FURNITURE NICHE
6R FRA 24X6
1R-7"
BENCH
UPPERS
DOOR GRADE PERMITTING
DN 1R
FLUSH (2R MAX.)
2R-7"
5"Ø
FLUSH
DN 14R
FLUSH
O.T.A.
RAILING
EXTENT OF FLR. AB.
UP 19R
FLUSH
3R-7"
7R-7"
INSULATE DUCTS ROUTING THRU GARAGE MIN 2.1 RSI
EXTENT OF FLOOR ABOVE
FOYER
8-6"
GROUND FLOOR PLAN ELEV. 'A'
ELEVATION 'C'
ELEVATION 'B'

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE

SYMBOL	DESCRIPTION
	RETURN AIR STACK ABOVE
	RETURN AIR STACK 2nd FLOOR
	REDUCER

No.	Description	Date
1.	REVISED AS PER ARCHITECTURALS	FEB/2020
2.		
3.		

REVISIONS

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO

ROSEDALE - WOB
4202 3592 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
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Email: info@hvacdesigns.ca
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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 SEPT/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 79973

CSA-F280-12 **WOB**

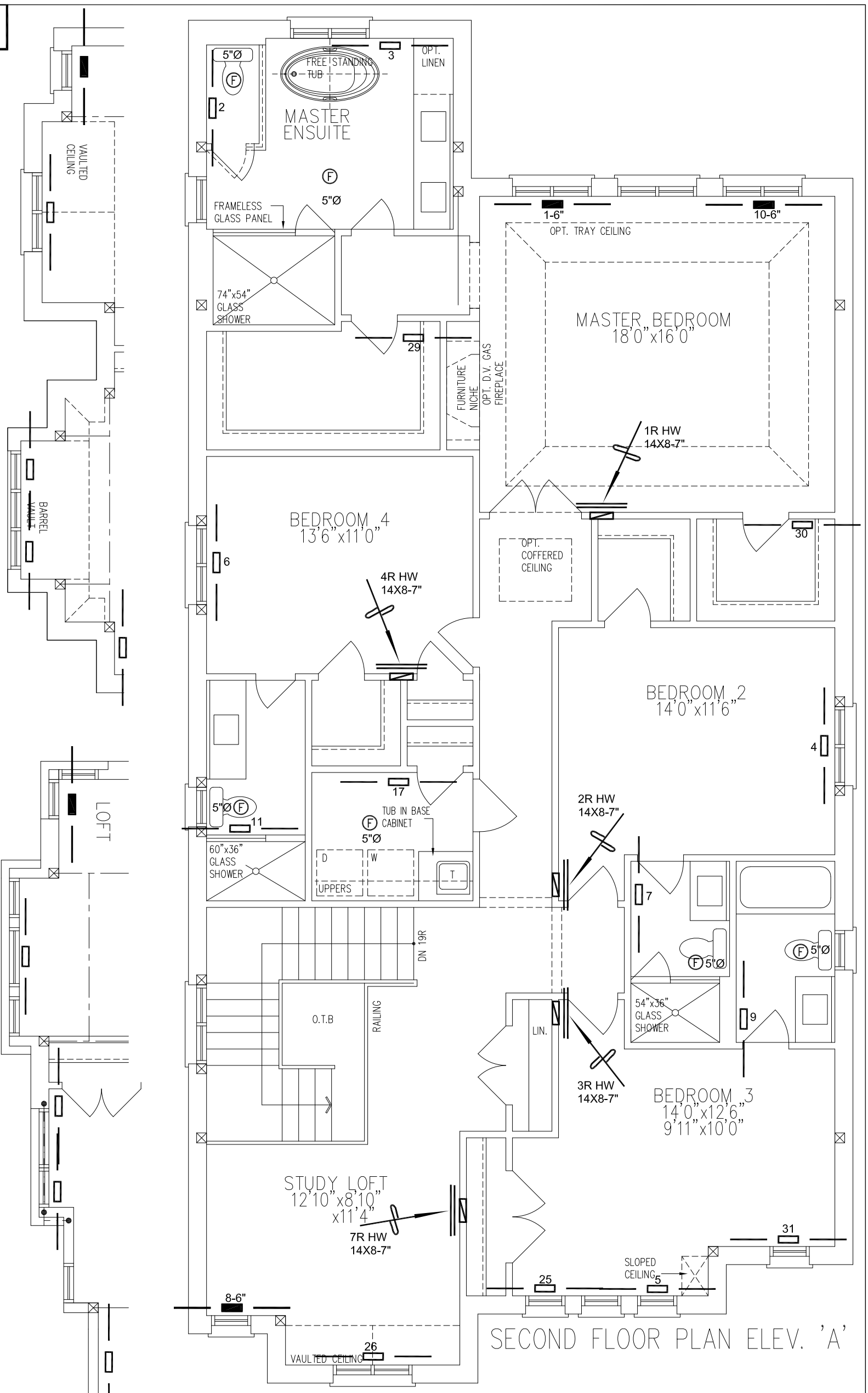
PACKAGE A1

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.

PARTIAL SECOND FLOOR PLAN – ELEVATION 'B'

PARTIAL SECOND FLOOR PLAN – ELEVATION 'C'



HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE
	SUPPLY AIR BOOT ABOVE				RETURN AIR STACK ABOVE
					RETURN AIR STACK 2nd FLOOR
					REDUCER

REVISIONS

No.	Description	Date
1.	REVISED AS PER ARCHITECTURALS	FEB/2020
2.		
3.		

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO

ROSEDALE - WOB
4202 3592 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
SECOND FLOOR HEATING LAYOUT

Date SEPT/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 79973

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:** 4202- ROSEDALE OPT SERV STAIR - WOB **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.

February 25, 2020
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.
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 | OPT SERV STAIR - WOB | DATE: Feb-20 | WINTER NATURAL AIR CHANGE RATE 0.407 | HEAT LOSS ΔT °F. 76 | CSA-F280-12
BUILDER: GOLD PARK HOMES | TYPE: 4202- ROSEDALE | GFA: 3700 | LO# 85450 | SUMMER NATURAL AIR CHANGE RATE 0.137 | HEAT GAIN ΔT °F. 13 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS			HERS			BED-2			BED-3			BED-4			ENS-2			LOFT			ENS-3			ENS-4		
EXP. WALL			47			34			7			18			36			12			0			38			9			11		
CLG. HT.			10			9			9			9			9			9			9			9			9			9		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	470			306			63			162			324			108			0			342			81			99		
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	18	383	288	0	0	0	0	0	0	0	0	0	0	0	0	9	192	144	0	0	0
EAST	21.3	41.6	0	0	0	0	0	0	0	0	0	0	0	0	53	1128	2202	0	0	0	0	0	0	41	872	1704	0	0	0	0	0	0
SOUTH	21.3	24.9	0	0	0	11	234	274	0	0	0	0	0	0	0	0	0	18	383	448	0	0	0	20	426	498	0	0	0	9	192	224
WEST	21.3	41.6	54	1149	2244	18	383	748	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	101.5	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	0	0	0
DOORS	25.2	4.3	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	0	0	0
NET EXPOSED WALL	4.5	0.8	416	1856	313	277	1236	208	63	281	47	144	643	108	271	1209	204	90	402	68	0	0	0	281	1254	211	72	321	54	90	402	68
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	480	616	282	168	216	99	98	126	58	324	416	190	280	359	165	168	216	99	45	58	26	276	354	162	45	58	26	66	85	39
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	82	38	0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	144	367	62	280	714	120	0	0	0	40	102	17	50	128	21	45	115	19	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			3622			2069			407			1809			3411			1000			160			3116			685			678		
SUB TOTAL HT GAIN				2839			1329			105			648			2691			615			44			2634			244			331	
LEVEL FACTOR / MULTIPLIER			0.20	0.33		0.20	0.33		0.20	0.33		0.20	0.33		0.20	0.33		0.20	0.33		0.20	0.33		0.20	0.33		0.20	0.33		0.20	0.33	
AIR CHANGE HEAT LOSS			1210			691			136			604			1140			334			53			1041			229			226		
AIR CHANGE HEAT GAIN				244			114			9			56			232			53			4			227			21			28	
DUCT LOSS			0			0			0			241			455			0			21			416			91			0		
DUCT GAIN				0			0			0			163			384			0			5			354			26			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					682			0			0			682			682			682			0			682			0			0
TOTAL HT LOSS BTU/H			4832			2760			543			2654			5005			1334			234			4573			1006			904		
TOTAL HT GAIN x 1.3 BTU/H				5518			1876			148			2325			5497			2066			68			5066			378			467	

ROOM USE			DIN				KT/GT				LAUN			PWD			FOY			MUD			HIS				WOB			BAS		
EXP. WALL			17				100				0			16			59			17			6				43			159		
CLG. HT.			11				11				9			12			11			12			9				10			10		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	187				1100				0			192			649			204			54				430			1113		
GLAZING			LOSS	GAIN			LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN	
NORTH	21.3	16.0	0	0	0		10	213	160		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		26	553	415	0	0	0
EAST	21.3	41.6	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
SOUTH	21.3	24.9	34	724	847		29	617	722		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
WEST	21.3	41.6	0	0	0		123	2617	5111		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		98	2085	4072	0	0	0
SKYLT.	37.2	101.5	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	4.3	0	0	0		10	252	43		0	0	0	0	0	0	57	1439	242	20	505	85	0	0	0		20	505	85	20	505	85
NET EXPOSED WALL	4.5	0.8	153	683	115		928	4141	697		0	0	0	192	857	144	592	2642	445	184	821	138	54	241	41		286	1276	215	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	0	0	0		0	0	0	477	1716	289
EXPOSED CLG	1.3	0.6	0	0	0		0	0	0		96	123	56	0	0	0	0	0	0	0	0	0	84	108	49		0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.3	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
EXPOSED FLOOR	2.6	0.4	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	84	214	36		0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0				0				0			0			0			0			0							2560		
SLAB ON GRADE HEAT LOSS			0				0				0			0			0			0			0				552					
SUBTOTAL HT LOSS			1406				7841				123			857			4081			1326			563				4972			4782		
SUB TOTAL HT GAIN				962				6733				56			144			687			223			126					4787			374
LEVEL FACTOR / MULTIPLIER			0.30	0.57			0.30	0.57			0.20	0.33		0.30	0.57		0.30	0.57		0.30	0.57		0.20	0.33						0.50	1.51	
AIR CHANGE HEAT LOSS			802				4470				41			488			2326			766			188							14737		
AIR CHANGE HEAT GAIN				83				580				5			12			59			19			11								444
DUCT LOSS			0				0				0			0			0			0			75							0		
DUCT GAIN				0				0				0			0			0			0			14								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					682				682				682			0			0			682			0							682
TOTAL HT LOSS BTU/H			2208				12311				164			1345			6407			2082			826				5523			19518		
TOTAL HT GAIN x 1.3 BTU/H				2244				10393				966			204			970			1202			196					6224			1951

TOTAL HEAT GAIN BTU/H: 48295 | TONS: 4.02 | LOSS DUE TO VENTILATION LOAD BTU/H: 3181 | STRUCTURAL HEAT LOSS: 74232 | TOTAL COMBINED HEAT LOSS BTU/H: 77413

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Michael O'Rourke

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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SITE NAME: PINE VALLEY & TESTON — OPT SERV STAIR - WOB
BUILDER: GOLD PARK HOMES — TYPE: 4202- ROSEDALE — DATE: Feb-20 — GFA: 3700 — LO# 85450

HEATING CFM	1525	COOLING CFM	1525	furnace pressure	0.6
TOTAL HEAT LOSS	74,232	TOTAL HEAT GAIN	47,760	furnace filter	0.05
AIR FLOW RATE CFM	20.54	AIR FLOW RATE CFM	31.93	a/c coil pressure	0.2
				available pressure for s/a & r/a	0.35
				plenum pressure s/a	0.18
				max s/a dif press. loss	0.02
				min adjusted pressure s/a	0.16

				r/a pressure	0.17
				r/a grille press. Loss	0.02
				adjusted pressure r/a	0.15

^LENNOX
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 = **1525**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 52 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	17	9	6
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	ENS	BED-2	BED-3	BED-4	ENS-2	LOFT	ENS-3	MBR	ENS-4	DIN	KT/GT	KT/GT	KT/GT	KT/GT	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.42	1.38	1.38	2.65	1.67	1.33	0.23	2.29	1.01	2.42	0.90	2.21	3.08	3.08	3.08	3.08	0.16	1.35	3.20	2.08	4.17	4.17	4.17	4.17
CFM PER RUN HEAT	50	28	28	55	34	27	5	47	21	50	19	45	63	63	63	63	3	28	66	43	86	86	86	86
RM GAIN MBH.	2.76	0.94	0.94	2.32	1.83	2.07	0.07	2.53	0.38	2.76	0.47	2.24	2.60	2.60	2.60	2.60	0.97	0.20	0.49	1.20	1.36	1.36	1.36	1.36
CFM PER RUN COOLING	88	30	30	74	59	66	2	81	12	88	15	72	83	83	83	83	31	7	15	38	44	44	44	44
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.17	0.17	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	62	53	61	60	49	25	48	55	48	67	39	10	43	47	46	57	52	22	42	24	45	65	13	36
EQUIVALENT LENGTH	160	150	130	190	150	140	190	190	160	180	140	150	130	130	130	130	190	160	150	110	170	140	120	130
TOTAL EFFECTIVE LENGTH	222	203	191	250	199	165	238	245	208	247	179	160	173	177	176	187	242	182	192	134	215	205	133	166
ADJUSTED PRESSURE	0.07	0.08	0.09	0.07	0.09	0.1	0.07	0.07	0.08	0.07	0.1	0.11	0.09	0.09	0.09	0.09	0.07	0.09	0.09	0.13	0.08	0.08	0.12	0.1
ROUND DUCT SIZE	**6**	4	4	5	5	5	4	**6**	4	**6**	4	5	5	5	5	5	4	4	5	4	**6**	**6**	5	5
HEATING VELOCITY (ft/min)	255	321	321	404	250	198	57	240	241	255	218	330	463	463	463	463	34	321	485	493	438	438	631	631
COOLING VELOCITY (ft/min)	449	344	344	543	433	485	23	413	138	449	172	529	609	609	609	609	356	80	110	436	224	224	323	323
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10
TRUNK	C	A	A	E	E	C	E	D	E	C	C	C	A	A	B	B	B	E	D	C	A	B	C	D

RUN #	25	26	27	28	29	30	31	32
ROOM NAME	BED-3	LOFT	BAS	FOY	HERS	HIS	BED-3	BAS
RM LOSS MBH.	1.67	2.29	4.17	3.20	0.54	0.83	1.67	4.17
CFM PER RUN HEAT	34	47	86	66	11	17	34	86
RM GAIN MBH.	1.83	2.53	1.36	0.49	0.15	0.20	1.83	1.36
CFM PER RUN COOLING	59	81	44	15	5	6	59	44
ADJUSTED PRESSURE	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.16
ACTUAL DUCT LGH.	45	57	33	40	50	53	58	22
EQUIVALENT LENGTH	140	150	180	150	180	180	160	120
TOTAL EFFECTIVE LENGTH	185	207	213	190	230	233	218	142
ADJUSTED PRESSURE	0.09	0.08	0.08	0.09	0.07	0.07	0.08	0.11
ROUND DUCT SIZE	5	5	**6**	5	4	4	5	5
HEATING VELOCITY (ft/min)	250	345	438	485	126	195	250	631
COOLING VELOCITY (ft/min)	433	595	224	110	57	69	433	323
OUTLET GRILL SIZE	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10
TRUNK	E	D	D	D	B	C	E	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	268	0.08	8.6	8	x	8	603	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	226	0.07	8.3	8	x	8	509	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	917	0.07	14	22	x	8	750	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	398	0.07	10.3	12	x	8	597	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	609	0.07	12	16	x	8	685	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1525	0.06	17.7	32	x	10	686
TRUNK Y	430	0.06	11	14	x	8	553
TRUNK Z	925	0.06	14.6	24	x	8	694
DROP	1525	0.06	17.7	24	x	14	654

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	130	125	130	130	365	300	130	0	0	0	0	0	0	0	0	215
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.	61	69	49	53	30	52	56	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	165	145	185	185	140	150	0	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	236	234	194	238	215	192	206	1	1	1	1	1	1	1	1	159
ADJUSTED PRESSURE	0.06	0.06	0.08	0.06	0.07	0.08	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	7	6.9	6.5	7	9.9	8.9	6.8	0	0	0	0	0	0	0	0	7.7
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	30	30	14	0	0	0	0	0	0	0	0	24

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Michael O'Rourke — INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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

TYPE: 4202- ROSEDALE LO # 85450
SITE NAME: PINE VALLEY & TESTON OPT SERV STAIR - WOB

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	8	@ 10.6 cfm	84.8	cfm
Table 9.32.3.A.		TOTAL	222.6	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	222.6	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	67.6	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: February-20

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

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 85450 Model: 4202- ROSEDALE Builder: GOLD PARK HOMES Date: 2/25/2020

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1647	10	16470
First	1647	11	18117
Second	2076	9	18684
Third	0	9	0
Fourth	0	9	0
		Total:	53,271.0 ft³
		Total:	1508.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.407
SUMMER NATURAL AIR CHANGE RATE	0.137

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

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

0.407 x 419.02 x 42 °C x 1.2 = 8638 W

= **29473 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.137 x 419.02 x 7 °C x 1.2 = 488 W

= **1665 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 13 °F x 1.08 x 0.25 = **536 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	29,473	9,753	1.511
2	0.3		15,512	0.570
3	0.2		17,643	0.334
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: 4202- ROSEDALE OPT SERV STAIR - WOB **BUILDER:** GOLD PARK HOMES
SFQT: 3700 **LO#** 85450 **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)	75

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):	53271.0	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: 68.0 ft	WIDTH: 33.0 ft	EXPOSED PERIMETER:	159.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	43.0 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

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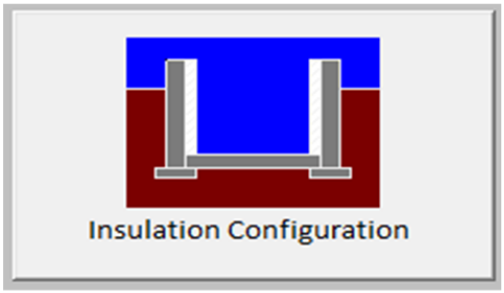
Residential Foundation Thermal Load Calculator

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):	**4.6**	 Insulation Configuration
Floor Width (m):	**10.1**	
Exposed Perimeter (m):	**48.5**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**1.79**	
Window Area (m^2):	**0.0**	
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):	**750**	

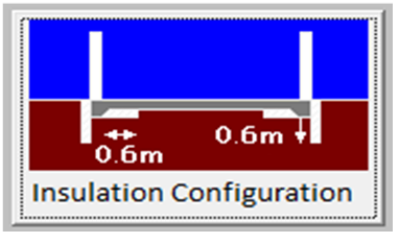
TYPE: 4202- ROSEDALE OPT SERV STAIR - WOB
LO# 85450

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		
Length (m):	**1.5**	
Width (m):	**10.1**	
Exposed Perimeter (m):	**13.1**	

Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	

Results	
Heating Load (Watts):	**162**

TYPE: 4202- ROSEDALE OPT SERV STAIR - WOB
LO# 85450

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):	9.14
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	1508.5
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 2010.8 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):	**0.407**
Cooling Air Leakage Rate (ACH/H):	**0.137**

TYPE: 4202- ROSEDALE OPT SERV STAIR - WOB

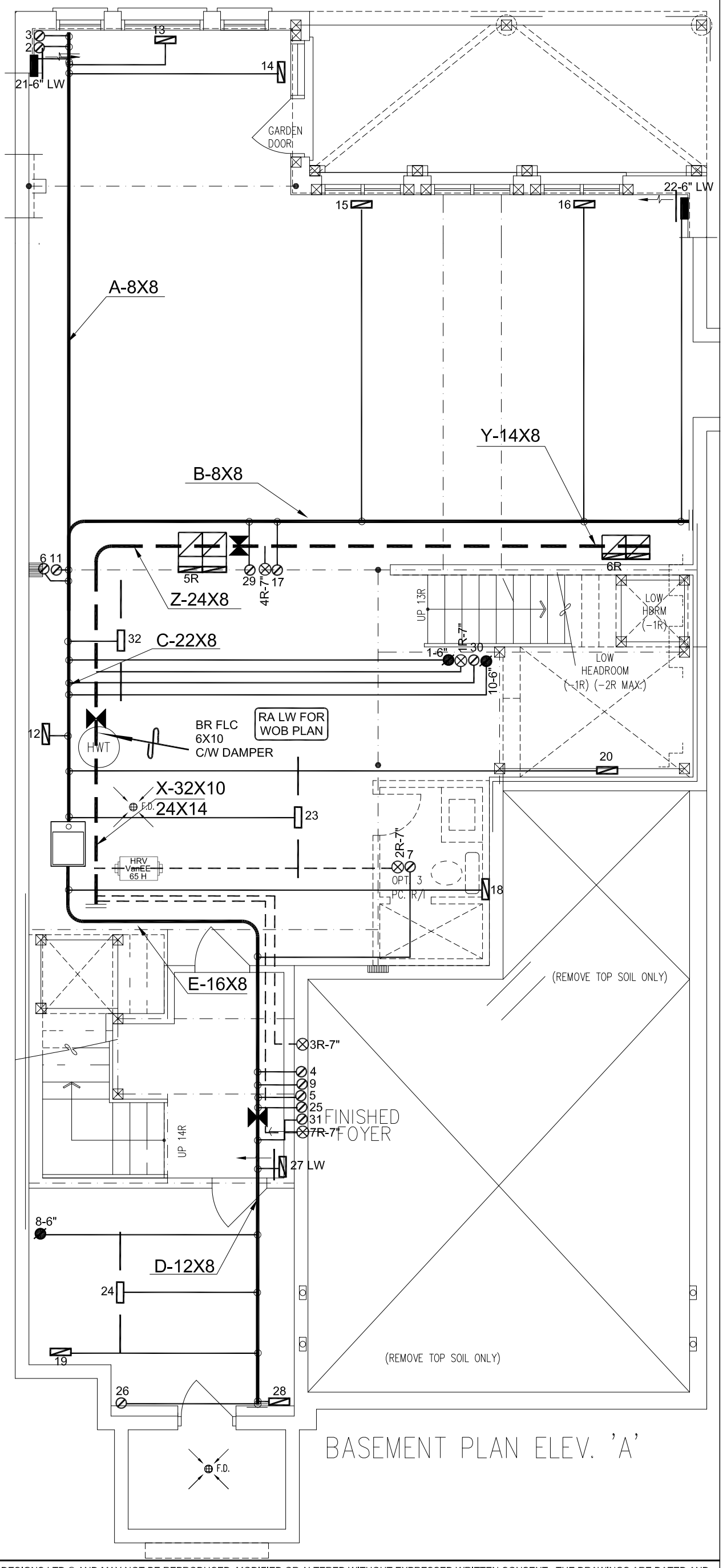
LO# 85450

CSA-F280-12 WOB

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.



BASEMENT PLAN ELEV. 'A'

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		6" SUPPLY AIR STACK 2nd FLOOR
	FRA- FLOOR RETURN AIR GRILLE		14"x8" RETURN AIR GRILLE		30"x8" RETURN AIR GRILLE
	RETURN AIR STACK ABOVE		RETURN AIR STACK 2nd FLOOR		REDUCER

REVISIONS

No.	Description	Date
1.		
2.		
3.		

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT SERV STAIR
ROSEDALE - WOB
4202 3700 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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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 77413 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	EL296UH090XE48C
INPUT	88 MBTU/H
OUTPUT	85 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1525 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	17	5	6
1ST FLOOR	9	2	2
BASEMENT	6	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 FEB/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 85450

CSA-F280-12 WOB

PACKAGE A1

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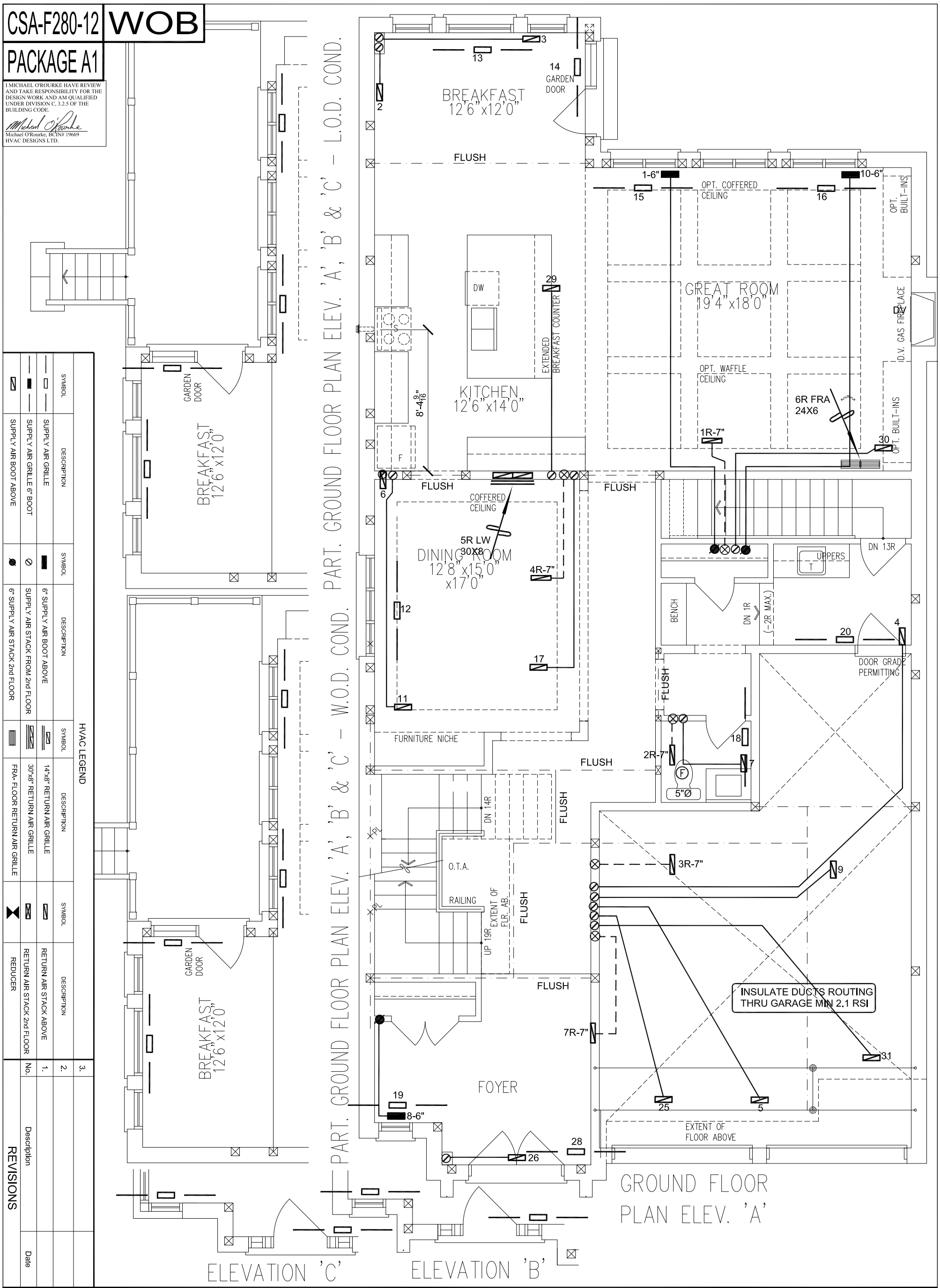

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE
	SUPPLY AIR STACK 2nd FLOOR				

SYMBOL	DESCRIPTION
	RETURN AIR STACK ABOVE
	RETURN AIR STACK 2nd FLOOR
	REDUCER

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Client
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VAUGHAN, ONTARIO
OPT SERV STAIR
ROSEDALE - WOB
4202 3700 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 FEB/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 85450

CSA-F280-12 **WOB**

PACKAGE A1

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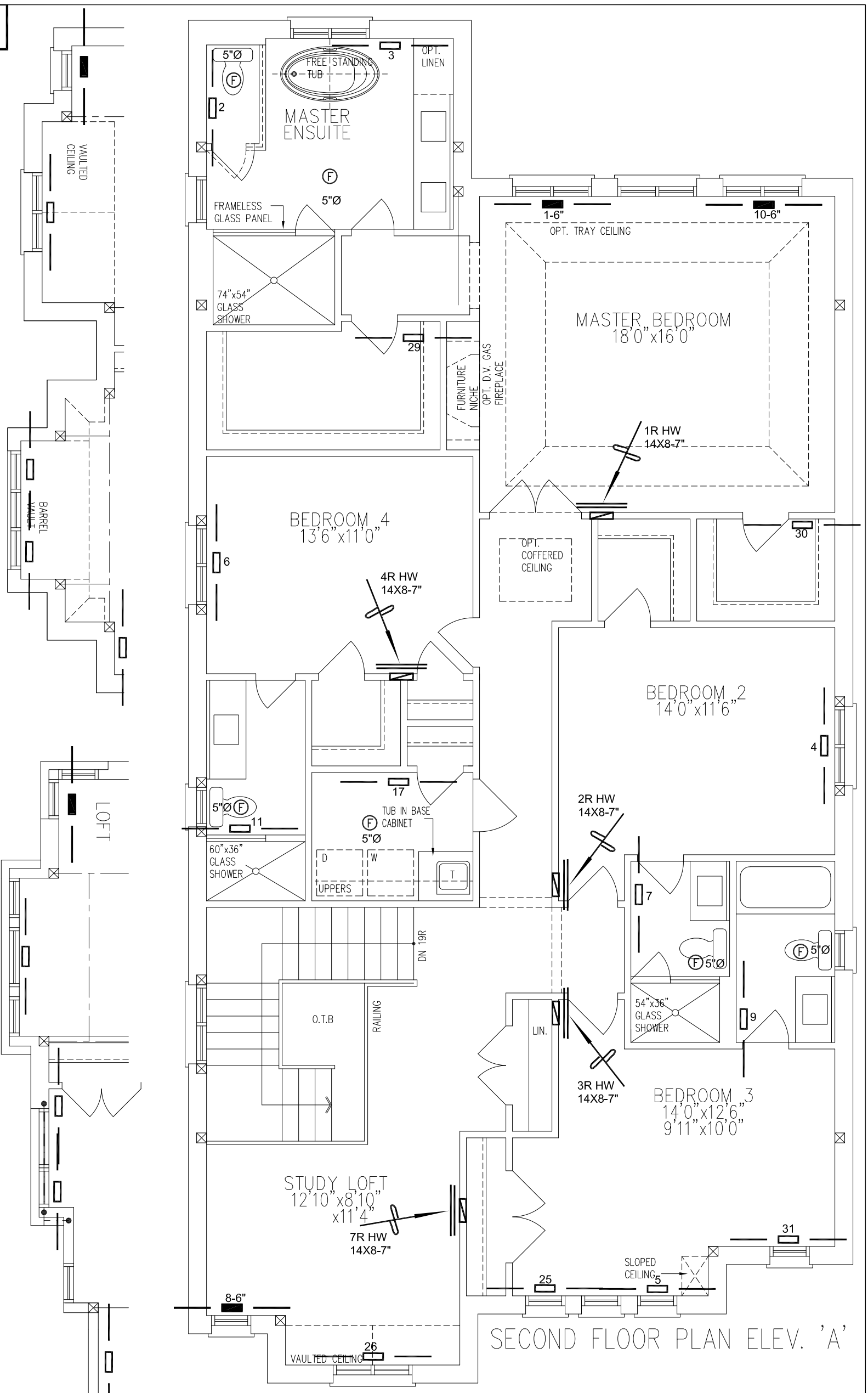
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

PARTIAL SECOND FLOOR PLAN – ELEVATION 'B'

PARTIAL SECOND FLOOR PLAN – ELEVATION 'C'



HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE
					RETURN AIR STACK ABOVE
					RETURN AIR STACK 2nd FLOOR
					REDUCER

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Client
GOLD PARK HOMES

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PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT SERV STAIR
ROSEDALE - WOB
4202 3700 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
SECOND FLOOR HEATING LAYOUT

Date FEB/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 85450