

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information			
Building number, street name		Unit no.	Lot/con.
Municipality VAUGHAN (WOODBIDGE)	Postal code	Plan number/ other description	
B. Individual who reviews and takes responsibility for design activities			
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.	
Street address 375 FINLEY AVE		Unit no. 202	Lot/con. N/A
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdesigns.ca
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]			
☐ House ☐ Small Buildings ☐ Large Buildings ☐ Complex Buildings ☒ HVAC – House ☐ Building Services ☐ Detection, Lighting and Power ☐ Fire Protection ☐ Building Structural ☐ Plumbing – House ☐ Plumbing – All Buildings ☐ 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: 5009 Project: PINE VALLEY & TESTON	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u> (print name)		declare that (choose one as appropriate):	
☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____			
☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>			
☐ 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 25, 2022		 Signature of Designer	
Date			

NOTE:

- 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.
- 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.

Application for a Permit Construct or Demolish – Effective January 1, 2015

SITE NAME: PINE VALLEY & TESTON										DATE: Oct-22										WINTER NATURAL AIR CHANGE RATE 0.468										HEAT LOSS ΔT °F. 76										CSA-F280-12																													
BUILDER: GOLD PARK HOMES										TYPE: 5009										GFA: 3751										LO# 86418										SUMMER NATURAL AIR CHANGE RATE 0.156										HEAT GAIN ΔT °F. 13										SB-12 PACKAGE A1									
ROOM USE				MBR				ENS				BED-2				BED-3				BED-4				ENS-2				ENS-3				ENS-4																																					
EXP. WALL				47				30				33				32				14				11				6				8																																					
CLG. HT.				9				9				9				9				9				9				9				9																																					
FACTORS																																																																					
GRS.WALL AREA		LOSS GAIN		423				270				297				288				126				99				54				72																																					
GLAZING				LOSS GAIN				LOSS GAIN				LOSS GAIN				LOSS GAIN				LOSS GAIN				LOSS GAIN				LOSS GAIN				LOSS GAIN																																					
NORTH		21.3	16.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	192	144	0	0	0	0	0	0	0	0																																				
EAST		21.3	41.6	0	0	0	0	0	0	0	0	0	63	1341	2618	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																				
SOUTH		21.3	24.9	0	0	0	0	7	149	174	0	0	0	0	0	0	19	404	473	0	0	0	0	0	0	0	7	149	174	7	149	174	0	0																																			
WEST		21.3	41.6	56	1192	2327	28	596	1163	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	57.1	4	149	228	0	0	0	0	4	149	228	4	149	228	4	149	228	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	367	1638	276	235	1049	177	297	1325	223	225	1004	169	107	478	80	90	402	68	47	210	35	65	290	49	0	0	0	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	0	0	0	0	0	0																																				
EXPOSED CLG		1.3	0.6	548	703	322	224	287	132	293	376	172	245	314	144	332	426	195	75	96	44	60	77	35	56	72	33	0	0	0	0	0	0																																				
NO ATTIC EXPOSED CLG		2.7	1.3	0	0	0	0	0	0	46	126	58	36	99	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																				
EXPOSED FLOOR		2.6	0.4	68	173	29	0	0	0	343	875	147	0	0	0	0	0	0	75	191	32	0	0	0	0	0	0	0	0	0	0	0	0																																				
BASEMENT/CRAWL HEAT LOSS				0		0		0		0		0		0		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		0		0		0		0		0		0																																			
SUBTOTAL HT LOSS				3855		2081		2852		2907		1457		881		436		511																																																			
SUB TOTAL HT GAIN				3182		1646		829		3205		977		288		245		256																																																			
LEVEL FACTOR / MULTIPLIER		0.20	0.45	0.20	0.45	0.20	0.45	0.20	0.45	0.20	0.45	0.20	0.45	0.20	0.45	0.20	0.45	0.20	0.45	0.20	0.45	0.20	0.45	0.20	0.45	0.20	0.45	0.20	0.45	0.20	0.45	0.20	0.45																																				
AIR CHANGE HEAT LOSS				1729		933		1279		1303		653		395		195		229																																																			
AIR CHANGE HEAT GAIN				197		102		51		198		60		18		15		16																																																			
DUCT LOSS				558		0		413		0		0		128		0		0																																																			
DUCT GAIN				462		0		189		0		0		31		0		0																																																			
HEAT GAIN PEOPLE		240		2	480	0		1	240	1	240	1	240	1	240	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																				
HEAT GAIN APPLIANCES/LIGHTS				765		0		765		765		765		765		765		765																																																			
TOTAL HT LOSS BTU/H				6142		3014		4543		4211		2110		1403		631		740																																																			
TOTAL HT GAIN x 1.3 BTU/H				6613		2272		2696		5731		2655		437		338		353																																																			

ROOM USE			GRT/BF			KIT			LIV/DIN			LAUND			W/R			FOY			MUD									WOB			BAS		
EXP. WALL			78			21			41			0			19			43			7									52			148		
CLG. HT.			11			11			11			9			11			11			11									10			10		
FACTORS																																			
GRS.WALL AREA	LOSS	GAIN	858			231			451			0			209			473			77									520			1036		
GLAZING	LOSS	GAIN	LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN				
NORTH	21.3	16.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
EAST	21.3	41.6	0	0	0	0	0	0	72	1532	2992	0	0	0	0	0	0	72	1532	2992	0	0	0	0	0	0	0	0	0	0	0	0			
SOUTH	21.3	24.9	0	0	0	10	213	249	34	724	847	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	192	224	0				
WEST	21.3	41.6	197	4192	8186	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	168	3575	6981	0	0	0			
SKYLT.	37.2	57.1	0	0	0	0	0	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	40	1010	170	20	505	85			0	0	0	20	505	85				
NET EXPOSED WALL	4.5	0.8	661	2950	497	221	986	166	345	1540	259	0	0	0	209	933	157	361	1611	271	57	254	43			352	1571	265	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	444	1598	269				
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	148	190	87	0	0	0	47	60	28	0	0	0			0	0	0	0	0	0				
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0	0	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	37	94	16	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0				
BASEMENT/CRAWL HEAT LOSS																																			
SLAB ON GRADE HEAT LOSS																																			
SUBTOTAL HT LOSS						7142						3795			284			933			4213			759											
SUB TOTAL HT GAIN																																			
LEVEL FACTOR / MULTIPLIER			0.30	0.57			0.30	0.57		0.30	0.57		0.20	0.45		0.30	0.57		0.30	0.57		0.30	0.57												
AIR CHANGE HEAT LOSS						4064						2160			127			531			2397			432											
AIR CHANGE HEAT GAIN																																			
DUCT LOSS						0						0			41			0			0			0											
DUCT GAIN																																			
HEAT GAIN PEOPLE	240		0			0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
HEAT GAIN APPLIANCES/LIGHTS						765			765			765			765			0			0			0											
TOTAL HT LOSS BTU/H						11206			1881			5955			453			1463			6611			1191											
TOTAL HT GAIN x 1.3 BTU/H						12981			1568			6652			1251			217			4778			177											

TOTAL HEAT GAIN BTU/H: 60788 TONS: 5.07 LOSS DUE TO VENTILATION LOAD BTU/H: 1631 STRUCTURAL HEAT LOSS: 79678 TOTAL COMBINED HEAT LOSS BTU/H: 81309

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

TYPE: 5009

DATE: Oct-22

GFA: 3751

LO# 86418

HEATING CFM 1995 COOLING CFM 1995
TOTAL HEAT LOSS 79,678 TOTAL HEAT GAIN 60,513
AIR FLOW RATE CFM 25.04 AIR FLOW RATE CFM 32.97

furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure
for s/a & r/a 0.35

LENNOX
EL196UH110XE60C 110

AFUE = 96 %
INPUT (BTU/H) = 110,000
OUTPUT (BTU/H) = **107,200**

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	14	13	7
R/A	0	0	5	2	1

plenium 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

LOW 0
MEDLOW 1420
MEDIUM 1550
MEDIUM HIGH 1725
HIGH 1995

DESIGN CFM = **1995**
CFM @ .6" E.S.P.

TEMPERATURE RISE 50 °F

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	BED-2	ENS-3	MBR	ENS-4	GRT/BF	GRT/BF	KIT	GRT/BF	LIV/DIN	LAUND	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.05	1.51	1.51	2.27	2.11	2.11	1.40	2.27	0.63	2.05	0.74	2.24	2.24	1.88	2.24	1.98	0.45	1.46	3.31	1.19	4.02	4.02	4.02	4.02
CFM PER RUN HEAT	51	38	38	57	53	53	35	57	16	51	19	56	56	47	56	50	11	37	83	30	101	101	101	101
RM GAIN MBH.	2.20	1.14	1.14	1.35	2.87	2.66	0.44	1.35	0.34	2.20	0.35	2.60	2.60	1.57	2.60	2.22	1.25	0.22	2.39	0.18	1.69	1.69	1.69	1.69
CFM PER RUN COOLING	73	37	37	44	94	88	14	44	11	73	12	86	86	52	86	73	41	7	79	6	56	56	56	56
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.16	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	71	54	34	29	35	23	57	54	15	87	22	55	43	20	49	17	50	60	37	55	75	39	40	37
EQUIVALENT LENGTH	160	160	160	190	120	180	190	150	180	150	200	130	160	190	130	90	180	110	150	150	140	160	160	150
TOTAL EFFECTIVE LENGTH	231	214	194	219	155	203	247	204	195	237	222	185	203	210	179	107	230	170	187	205	215	199	200	187
ADJUSTED PRESSURE	0.07	0.08	0.09	0.08	0.1	0.08	0.07	0.08	0.09	0.07	0.08	0.09	0.08	0.08	0.09	0.16	0.07	0.1	0.09	0.08	0.08	0.08	0.08	0.09
ROUND DUCT SIZE	6	4	4	5	6	6	4	5	4	6	4	6	6	5	6	5	5	4	6	4	6	6	6	6
HEATING VELOCITY (ft/min)	260	436	436	419	270	270	402	419	184	260	218	286	286	345	286	367	81	424	423	344	515	515	515	515
COOLING VELOCITY (ft/min)	372	424	424	323	479	449	161	323	126	372	138	438	438	382	438	536	301	80	403	69	286	286	286	286
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	C	C	E	D	C	E	E	E	A	C	C	B	C	B	E	E	B	D	A	A	B	C	B

RUN #	25	26	27	28	29	30	31	32	33	34
ROOM NAME	BAS	BAS	MBR	BED-3	GRT/BF	GRT/BF	LIV/DIN	LIV/DIN	FOY	BAS
RM LOSS MBH.	4.02	4.02	2.05	2.11	2.24	2.24	1.98	1.98	3.31	4.02
CFM PER RUN HEAT	101	101	51	53	56	56	50	50	83	101
RM GAIN MBH.	1.69	1.69	2.20	2.87	2.60	2.60	2.22	2.22	2.39	1.69
CFM PER RUN COOLING	56	56	73	94	86	86	73	73	79	56
ADJUSTED PRESSURE	0.16	0.16	0.17	0.16	0.16	0.16	0.17	0.17	0.16	0.16
ACTUAL DUCT LGH.	52	25	62	44	58	63	25	31	31	59
EQUIVALENT LENGTH	140	100	150	160	160	140	110	120	150	150
TOTAL EFFECTIVE LENGTH	192	125	212	204	218	203	135	151	181	209
ADJUSTED PRESSURE	0.08	0.13	0.08	0.08	0.07	0.08	0.13	0.11	0.09	0.08
ROUND DUCT SIZE	6	6	6	6	6	6	5	5	6	6
HEATING VELOCITY (ft/min)	515	515	260	270	286	286	367	367	423	515
COOLING VELOCITY (ft/min)	286	286	372	479	438	438	536	536	403	286
OUTLET GRILL SIZE	4X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	4X10	4X10
TRUNK	B	E	C	D	A	A	D	D	D	B

SUPPLY AIR TRUNK SIZE

	TRUNK	STATIC	ROUND	RECT			VELOCITY		TRUNK	STATIC	ROUND	RECT			VELOCITY
	CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)
TRUNK A	345	0.07	9.7	12	x	8	518	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	898	0.07	13.9	22	x	8	735	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	1301	0.07	16	30	x	8	781	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	372	0.08	9.7	12	x	8	558	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	699	0.07	12.7	18	x	8	699	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	x	8	0

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)	
TRUNK O	0	0.05	0	0	x	8	0
TRUNK P	0	0.05	0	0	x	8	0
TRUNK Q	0	0.05	0	0	x	8	0
TRUNK R	0	0.05	0	0	x	8	0
TRUNK S	0	0.05	0	0	x	8	0
TRUNK T	0	0.05	0	0	x	8	0
TRUNK U	0	0.05	0	0	x	8	0
TRUNK V	0	0.05	0	0	x	8	0
TRUNK W	0	0.05	0	0	x	8	0
TRUNK X	1570	0.05	18.7	34	x	10	665
TRUNK Y	425	0.05	11.5	16	x	8	478
TRUNK Z	560	0.05	12.7	18	x	8	560
DROP	1995	0.05	20.4	24	x	18	665

RETURN AIR #	1	2	3	4	5	6	7									BR
AIR VOLUME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	345
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.	90	59	42	53	37	60	26	1	1	1	1	1	1	1	1	16
EQUIVALENT LENGTH	225	175	165	245	195	200	120	0	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	315	234	207	298	232	260	146	1	1	1	1	1	1	1	1	161
ADJUSTED PRESSURE	0.05	0.06	0.07	0.05	0.06	0.06	0.10	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	8.3	7	9.1	7	7	10.5	9.6	0	0	0	0	0	0	0	0	9.1
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	24	14	30	14	14	30	30	0	0	0	0	0	0	0	0	30

TYPE: 5009
SITE NAME: PINE VALLEY & TESTON

LO # 86418

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	<u>2</u> @ 21.2 cfm <u>42.4</u> cfm	
Other Bedrooms	<u>3</u> @ 10.6 cfm <u>31.8</u> cfm	
Kitchen & Bathrooms	<u>6</u> @ 10.6 cfm <u>63.6</u> cfm	
Other Rooms	<u>5</u> @ 10.6 cfm <u>53.0</u> cfm	
Table 9.32.3.A.	TOTAL <u>190.8</u> 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	<u>190.8</u> cfm	
Less Principal Ventil. Capacity	<u>79.5</u> cfm	
Required Supplemental Capacity	<u>111.3</u> cfm	

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
<u>79.5</u> cfm	<u>3.0</u> sones ☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION					
CFM		ΔT °F		FACTOR	% LOSS
79.5 CFM	X	76 F	X	1.08	X 0.25

SUPPLEMENTAL FANS		PANASONIC		
Location	Model	cfm	HVI	Sones
ENS	FV-05-11VK1	50	☒	0.3
ENS-2	FV-05-11VK1	50	☒	0.3
ENS-4	FV-05-11VK1	50	☒	0.3
W/R	FV-05-11VK1	50	☒	0.3

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
<u>155</u> cfm high	<u>64</u> cfm low	
<u>75</u> % Sensible Efficiency	☒ HVI Approved	
@ 32 deg F (0 deg C)		

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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	October-22

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

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 86418	Model: 5009	Builder: GOLD PARK HOMES	Date: 2022-10-25																																																									
Volume Calculation			Air Change & Delta T Data																																																									
House Volume <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr> <td>Bsmt</td> <td>1672</td> <td>10</td> <td>16720</td> </tr> <tr> <td>First</td> <td>1672</td> <td>11</td> <td>18392</td> </tr> <tr> <td>Second</td> <td>2079</td> <td>9</td> <td>18711</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>53,823.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>1524.1 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1672	10	16720	First	1672	11	18392	Second	2079	9	18711	Third	0	9	0	Fourth	0	9	0	Total:			53,823.0 ft³	Total:			1524.1 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 20%;">0.468</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.156</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DTDh</td> <td>22</td> <td>-20</td> <td>42</td> <td>76</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>31</td> <td>7</td> <td>13</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.468	SUMMER NATURAL AIR CHANGE RATE	0.156	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-20	42	76	Summer DTDc	24	31	7	13
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.468 x 423.36 x 42 °C x 1.2 = 10029 W = 34219 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.156 x 423.36 x 7 °C x 1.2 = 564 W = 1923 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 76 °F x 1.08 x 0.25 = 1631 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 13 °F x 1.08 x 0.25 = 275 Btu/h																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																												
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{level})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																								
1	0.5	34,219	11,013	1.554																																																								
2	0.3		18,042	0.569																																																								
3	0.2		15,263	0.448																																																								
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																																																												

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** 5009**BUILDER:** GOLD PARK HOMES**SFQT:** 3751**LO#** 86418**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):	53823.0	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: 58.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	148.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	52.0 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	-

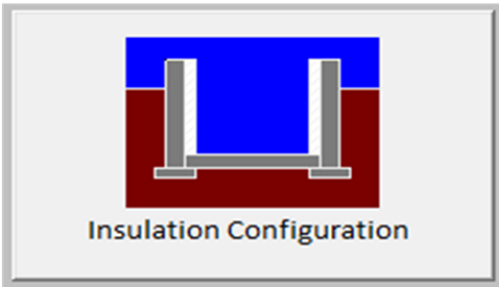
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

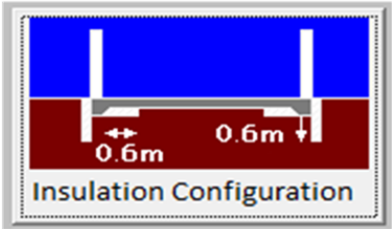
Supplemental tool for CAN/CSA-F280

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):	12.8	
Exposed Perimeter (m):	45.1	
Wall Height (m):	3.0	
Depth Below Grade (m):	1.84	
Window Area (m ²):	0.8	
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):		830

TYPE: 5009
LO# 86418

Residential Slab on Grade 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):	12.8	
Exposed Perimeter (m):	15.8	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		217

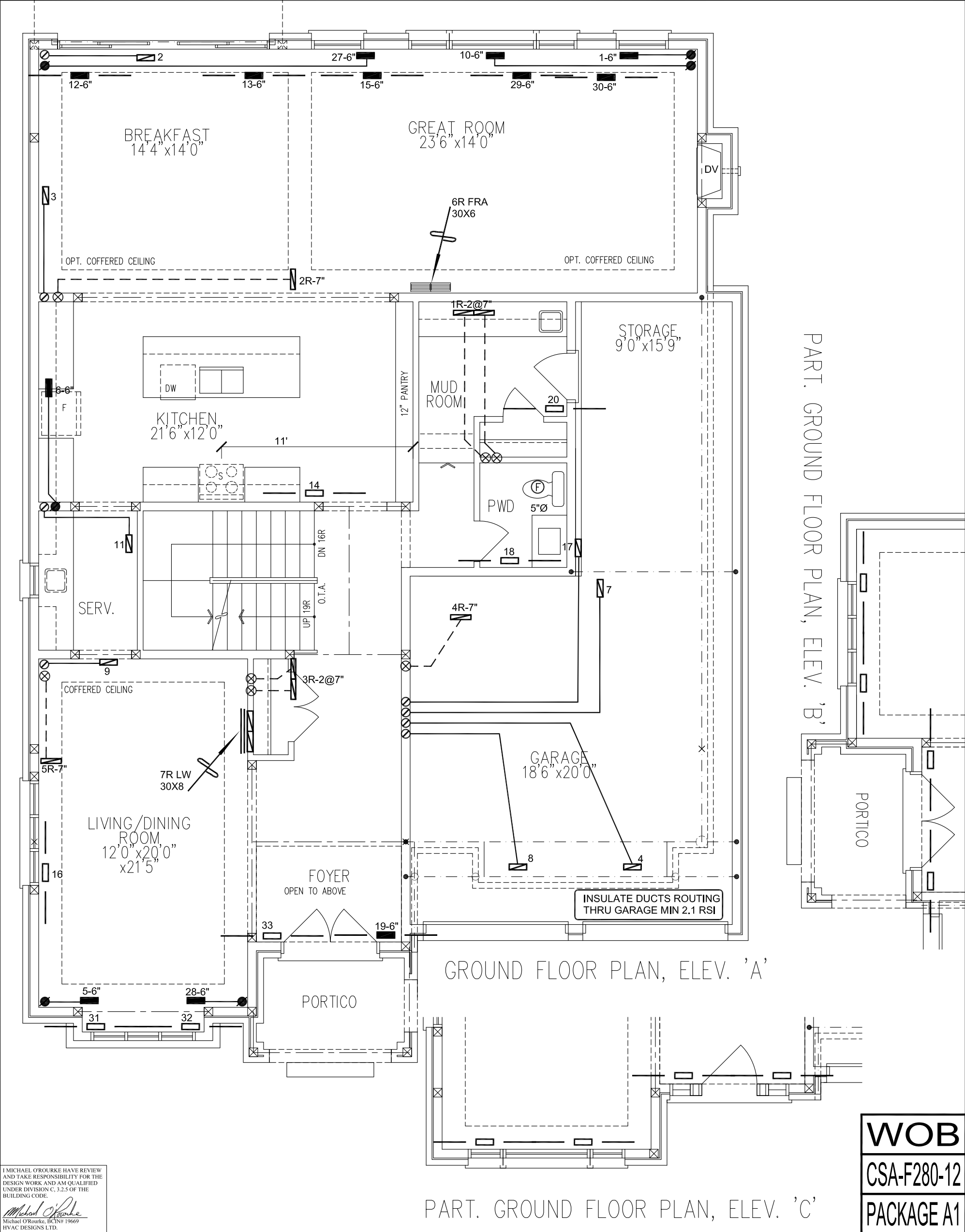
TYPE: 5009
LO# 86418

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):	11.28			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1524.1			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	2031.7 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	37.5	37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.468			
Cooling Air Leakage Rate (ACH/H):	0.156			

TYPE: 5009
LO# 86418



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

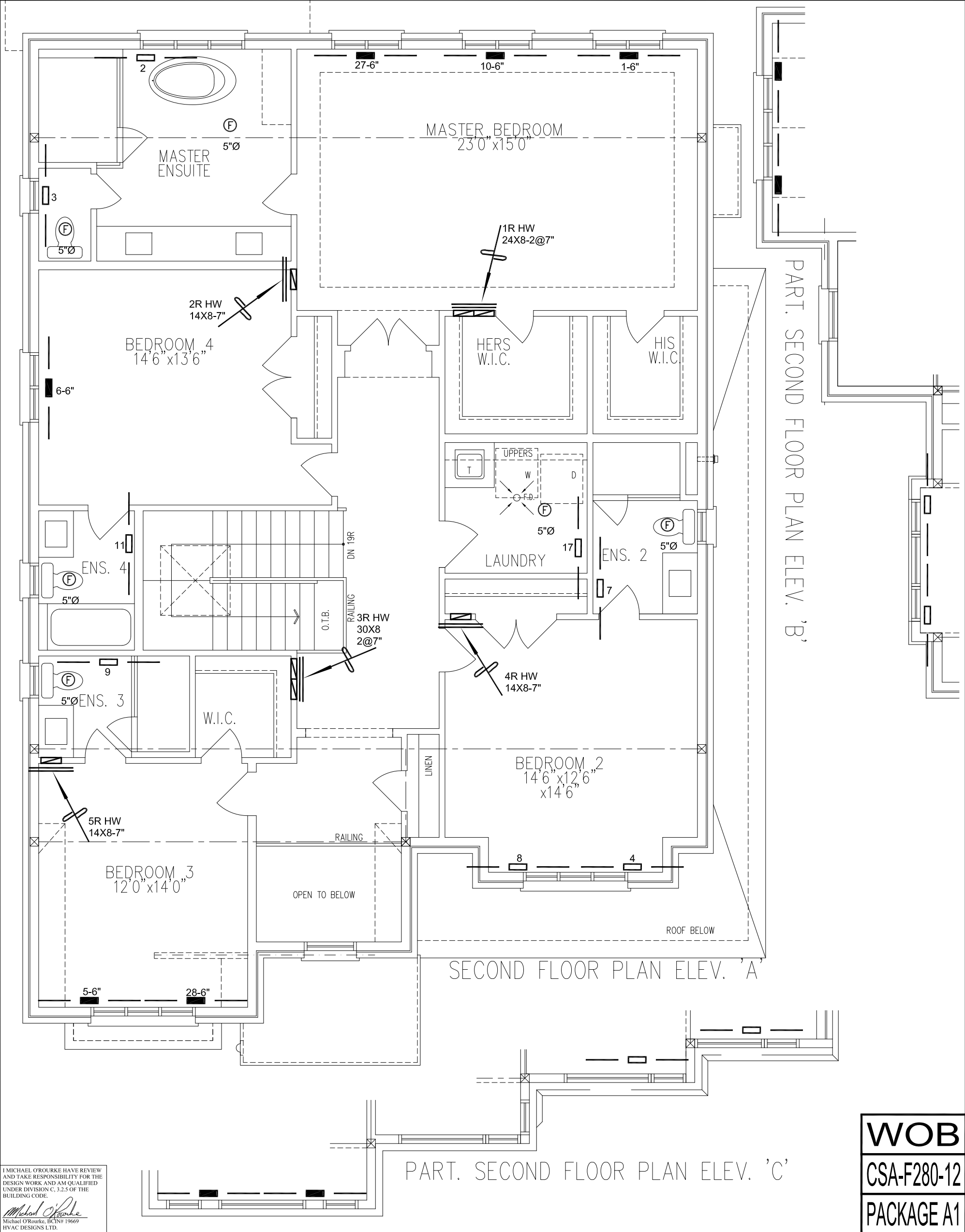
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

WOB
CSA-F280-12
PACKAGE A1

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

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Client		 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	
GOLD PARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	OCT/2022
PINE VALLEY & TESTON VAUGHAN, ONTARIO			Scale	3/16" = 1'-0"
5009 - WOB		3751 sqft	BCIN# 19669	
			LO#	99151



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

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

WOB

CSA-F280-12

PACKAGE A1

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
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	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

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Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO

5009 - WOB

3751 sqft

HVACDESIGNS LTD.

375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdsgns.ca
Web: www.hvacdsgns.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

OCT/2022

Scale

3/16" = 1'-0"

BCIN# 19669

LO#

99151