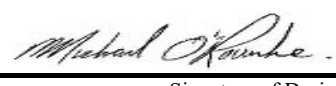


Schedule 1: Designer Information

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 ALT 5 BED - WOB Project: PINE VALLEY & TESTON	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u> declare that (choose one as appropriate): (print name)			
☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____			
☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <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						ALT 5 BED - WOB						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# 99152						SUMMER NATURAL AIR CHANGE RATE 0.156						HEAT GAIN ΔT °F. 13		SB-12 PACKAGE A1					
ROOM USE			MBR			ENS			WIC			BED-3			BED-4			BED-5			S-BATH			BED-2			ENS-3			ENS-4							
EXP. WALL			20			30			23			33			32			14			9			12			6			8							
CLG. HT.			9			9			9			9			9			9			9			9			9			9							
FACTORS																																					
GRS.WALL AREA			LOSS GAIN			180			270			207			297			288			126			81			108			54			72				
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	0	0	0	0	0	0	0	0	9	192	144	19	404	304	0	0	0	0	0	0	0			
EAST			21.3	40.3	0	0	0	0	0	0	0	0	0	0	0	0	63	1341	2538	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
SOUTH			21.3	24.9	0	0	0	7	149	174	0	0	0	0	0	0	0	0	0	19	404	473	0	0	0	0	0	0	7	149	174	7	149	174	0		
WEST			21.3	40.3	38	809	1531	28	596	1128	18	383	725	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	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	142	634	107	235	1049	177	189	843	142	297	1325	223	225	1004	169	107	478	80	72	321	54	89	397	67	47	210	35	65	290	49			
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	316	406	186	208	267	122	112	144	66	293	376	172	245	314	144	319	409	187	180	231	106	192	246	113	60	77	35	56	72	33			
NO ATTIC EXPOSED CLG			2.7	1.3	0	0	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			
EXPOSED FLOOR			2.6	0.4	68	173	29	0	0	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		
BASEMENT/CRAWL HEAT LOSS			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	
SUBTOTAL HT LOSS			2170			2060			1370			2852			2907			1440			935			1048			436			511							
SUB TOTAL HT GAIN			2081			1601			933			829			3125			969			336			483			245			256							
LEVEL FACTOR / MULTIPLIER			0.20	0.39		0.20	0.39		0.20	0.39		0.20	0.39		0.20	0.39		0.20	0.39		0.20	0.39		0.20	0.39		0.20	0.39		0.20	0.39						
AIR CHANGE HEAT LOSS			842			799			532			1106			1128			559			363			406			169			198							
AIR CHANGE HEAT GAIN			132			102			59			53			198			62			21			31			16			16							
DUCT LOSS			301			0			0			396			0			0			130			0			0			0							
DUCT GAIN			332			0			0			175			0			0			36			0			0			0							
HEAT GAIN PEOPLE			240		2	480	0	0	0	0	1	240	1	240	1	240	1	240	1	240	0	0	1	240	0	0	0	0	0	0	0	0	0	0			
HEAT GAIN APPLIANCES/LIGHTS			626			0			0			626			626			626			0			626			0			0							
TOTAL HT LOSS BTU/H			3313			2860			1902			4354			4035			1999			1428			1454			605			709							
TOTAL HT GAIN x 1.3 BTU/H			4746			2214			1290			2499			5446			2466			511			1794			339			354							

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	GRT/BF	KIT	LIV/DIN	LAUND	W/R	FOY	MUD					WOB	BAS
				78	21	41	16	19	31	7					52	148
				11	11	11	9	11	11	11					10	10
GRS.WALL AREA	LOSS	GAIN		858	231	451	144	209	341	77					520	1036
GLAZING	LOSS	GAIN		LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS					LOSS	GAIN
NORTH	21.3	16.0	0	0	0	0	0	0	0	0					0	0
EAST	21.3	40.3	0	0	0	72	1532	2901	56	1192	2256	0	0	0	0	0
SOUTH	21.3	24.9	0	0	0	10	213	249	34	724	847	0	0	0	9	192
WEST	21.3	40.3	197	4192	7936	0	0	0	0	0	0	0	0	0	168	3575
SKYLT.	37.2	57.1	0	0	0	0	0	0	0	0	0	0	0	0	6	128
DOORS	25.2	4.3	0	0	0	0	0	0	0	0	0	0	0	0	20	505
NET EXPOSED WALL	4.5	0.8	661	2950	497	221	986	166	345	1540	259	72	321	54	352	1571
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	47	60	28	0	0	0	444	1598
NO ATTIC EXPOSED CLG	2.7	1.3	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	40	1010	170	0	0
BASEMENT/CRAWL HEAT LOSS			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
SUBTOTAL HT LOSS			7142		1199	3795	1914	933	2622	759					741	2806
SUB TOTAL HT GAIN			8433		415	4006	2593	157	1029	128					5887	820
LEVEL FACTOR / MULTIPLIER	0.30	0.62		0.30	0.62	0.30	0.62	0.30	0.62	0.30					7033	0.50
AIR CHANGE HEAT LOSS			4457		748	2368	742	582	1636	474						17110
AIR CHANGE HEAT GAIN			536		26	254	165	10	65	8						499
DUCT LOSS			0		0	0	0	0	0	0						0
DUCT GAIN			0		0	0	0	0	0	0						0
HEAT GAIN PEOPLE	240		0	0	0	0	0	0	0	0					0	0
HEAT GAIN APPLIANCES/LIGHTS			626		626	626	626	626	0	0					0	626
TOTAL HT LOSS BTU/H			11599		1947	6164	2656	1515	4259	1233					5887	22338
TOTAL HT GAIN x 1.3 BTU/H			12473		1388	6353	4399	1031	1422	177					9142	2528

TOTAL HEAT GAIN BTU/H: 60903 TONS: 5.08 LOSS DUE TO VENTILATION LOAD BTU/H: 1958 STRUCTURAL HEAT LOSS: 80255 TOTAL COMBINED HEAT LOSS BTU/H: 82213

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

ALT 5 BED - WOB
TYPE: 5009

DATE: Oct-22

GFA: 3751

LO# 99152

HEATING CFM 1995 COOLING CFM 1995
TOTAL HEAT LOSS 80,255 TOTAL HEAT GAIN 60,574
AIR FLOW RATE CFM 24.86 AIR FLOW RATE CFM 32.94

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	17	13	7
R/A	0	0	5	2	1

plenium 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

LOW 0
MEDLOW 1420
MEDIUM 1550
MEDIUM HIGH 1725
HIGH 1995

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

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	WIC	ENS	ENS	BED-3	BED-4	BED-5	S-BATH	BED-3	ENS-3	MBR	ENS-4	GRT/BF	GRT/BF	KIT	GRT/BF	LIV/DIN	S-BATH	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.90	1.43	1.43	2.18	2.02	2.00	0.71	2.18	0.60	1.66	0.71	2.32	2.32	1.95	2.32	2.05	0.71	1.51	2.13	1.23	4.03	4.03	4.03	4.03
CFM PER RUN HEAT	47	36	36	54	50	50	18	54	15	41	18	58	58	48	58	51	18	38	53	31	100	100	100	100
RM GAIN MBH.	1.29	1.11	1.11	1.25	2.72	2.47	0.26	1.25	0.34	2.37	0.35	2.49	2.49	1.39	2.49	2.12	0.26	1.03	0.71	0.18	1.67	1.67	1.67	1.67
CFM PER RUN COOLING	42	36	36	41	90	81	8	41	11	78	12	82	82	46	82	70	8	34	23	6	55	55	55	55
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	0.17	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	170	150	180	150	200	130	160	190	130	90	180	110	160	150	140	160	160	150
TOTAL EFFECTIVE LENGTH	231	214	194	219	155	203	227	204	195	237	222	185	203	210	179	107	230	170	197	205	215	199	200	187
ADJUSTED PRESSURE	0.07	0.08	0.09	0.08	0.1	0.08	0.08	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	5	4	4	5	6	6	4	5	4	6	4	6	6	5	6	5	4	4	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	345	413	413	396	255	255	207	396	172	209	207	296	296	352	296	374	207	436	389	356	510	510	510	510
COOLING VELOCITY (ft/min)	308	413	413	301	459	413	92	301	126	398	138	418	418	338	418	514	92	390	169	69	280	280	280	280
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	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	35	36	37
ROOM NAME	BAS	BAS	MBR	BED-4	GRT/BF	GRT/BF	LIV/DIN	LIV/DIN	FOY	BED-2	LAUND	LAUND	BAS
RM LOSS MBH.	4.03	4.03	1.66	2.02	2.32	2.32	2.05	2.05	2.13	1.45	1.33	1.33	4.03
CFM PER RUN HEAT	100	100	41	50	58	58	51	51	53	36	33	33	100
RM GAIN MBH.	1.67	1.67	2.37	2.72	2.49	2.49	2.12	2.12	0.71	1.79	2.20	2.20	1.67
CFM PER RUN COOLING	55	55	78	90	82	82	70	70	23	59	72	72	55
ADJUSTED PRESSURE	0.16	0.16	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.16
ACTUAL DUCT LGH.	52	25	62	44	58	63	25	31	31	71	49	42	59
EQUIVALENT LENGTH	140	100	150	160	160	140	110	120	150	180	170	150	150
TOTAL EFFECTIVE LENGTH	192	125	212	204	218	203	135	151	181	221	229	212	209
ADJUSTED PRESSURE	0.08	0.13	0.08	0.08	0.07	0.08	0.13	0.11	0.1	0.08	0.08	0.08	0.08
ROUND DUCT SIZE	6	6	6	6	6	6	5	5	5	5	5	5	6
HEATING VELOCITY (ft/min)	510	510	209	255	296	296	374	374	389	264	242	242	510
COOLING VELOCITY (ft/min)	280	280	398	459	418	418	514	514	169	433	529	529	280
OUTLET GRILL SIZE	4X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10
TRUNK	B	E	C	D	A	A	D	D	D	A	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	371	0.07	10	12	x	8	557	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	925	0.07	14.1	24	x	8	694	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	1312	0.07	16.1	30	x	8	787	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	374	0.08	9.7	12	x	8	561	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	684	0.07	12.6	18	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	STATIC	ROUND	RECT		VELOCITY	
	CFM	PRESS.	DUCT	DUCT		(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	540	0.05	12.5	18	x	8	540
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	340
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	155	195	200	120	0	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	315	234	207	208	232	260	146	1	1	1	1	1	1	1	1	161
ADJUSTED PRESSURE	0.05	0.06	0.07	0.07	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	7.9	7	9.1	6.9	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 # 99152
ALT 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	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>4</u> @ 10.6 cfm	<u>42.4</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>201.4</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		<u>95.4</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>201.4</u>	cfm
Less Principal Ventil. Capacity	<u>95.4</u>	cfm
Required Supplemental Capacity	<u>106.0</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
<u>95.4</u> cfm	<u>3.0</u> sones
☒ HVI Approved	

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
95.4 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
S-BATH	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#: 99152	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																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 95 CFM x 76 °F x 1.08 x 0.25 = 1958 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 95 CFM x 13 °F x 1.08 x 0.25 = 330 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	34,219	11,115	1.539																																																								
2	0.3		16,451	0.624																																																								
3	0.2		17,643	0.388																																																								
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	ALT 5 BED - WOB	BUILDER: GOLD PARK HOMES
SFQT: 3751	LO# 99152	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 (ft³):	53823.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft²):	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	-

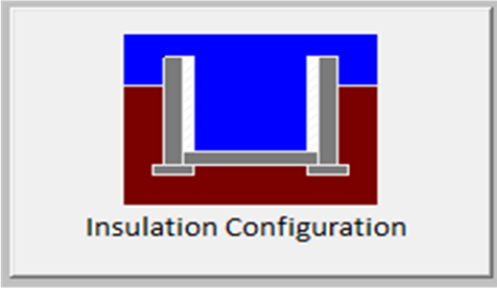
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

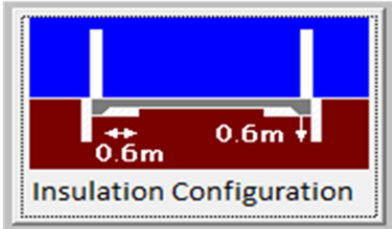
Weather Station Description		
Province:	Ontario	
Region:	Vaughan (Woodbridge)	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	4.6	
Floor Width (m):	12.8	
Exposed Perimeter (m):	45.1	
Wall Height (m):	3.0	
Depth Below Grade (m):	1.84	
Window Area (m ²):	1.4	
Door Area (m ²):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		822

TYPE: 5009
LO# 99152

ALT 5 BED - WOB

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# 99152

ALT 5 BED - WOB

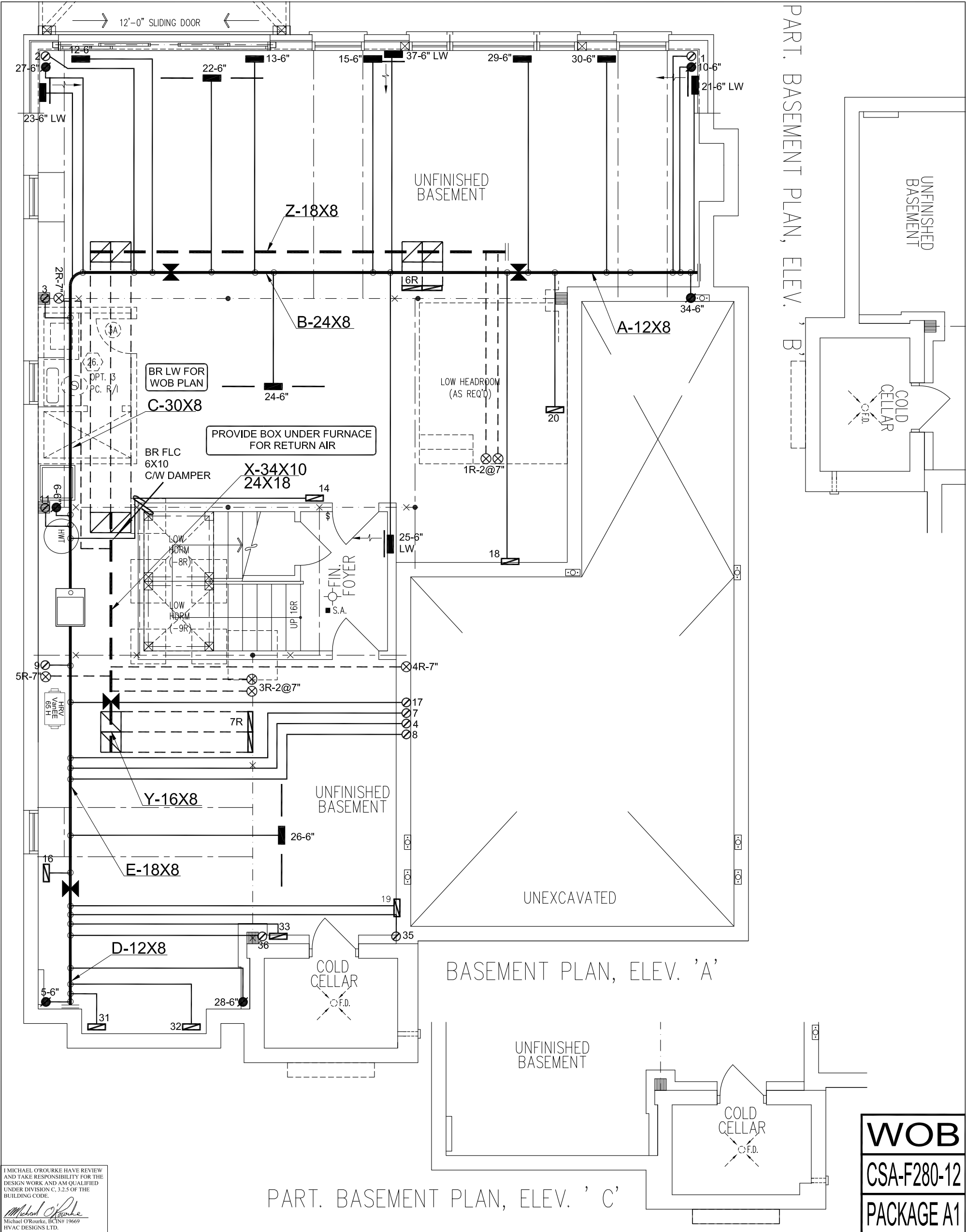
Air Infiltration Residential Load Calculator

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		
	45.0	45.0		
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# 99152

ALT 5 BED - WOB



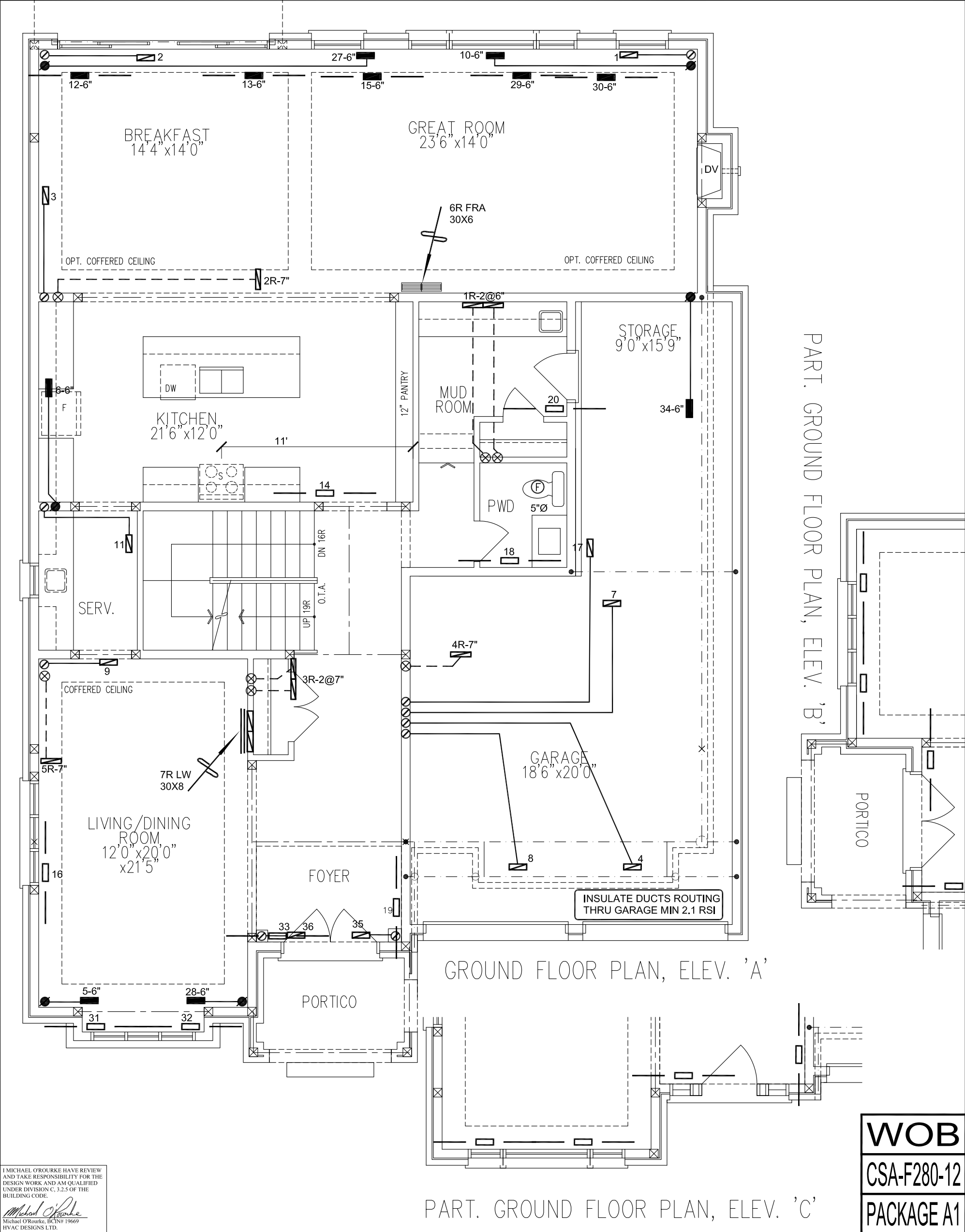
I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

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

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	HVACDESIGNS 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 82213 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title BASEMENT HEATING LAYOUT		
Project Name PINE VALLEY & TESTON VAUGHAN, ONTARIO		MAKE LENNOX	3RD FLOOR							
		MODEL EL196UH110XE60C	2ND FLOOR			17	5			5
		INPUT 110 MBTU/H	1ST FLOOR			13	2	2		
		OUTPUT 107.2 MBTU/H	BASEMENT			7	1	0		
COOLING 5.0 TONS		Date OCT/2022								
FAN SPEED 1995 cfm @ 0.6" w.c.	Scale 3/16" = 1'-0"									
OPT 5 BED - WOB 5009 3751 sqft	BCIN# 19669									
	LO# 99152									



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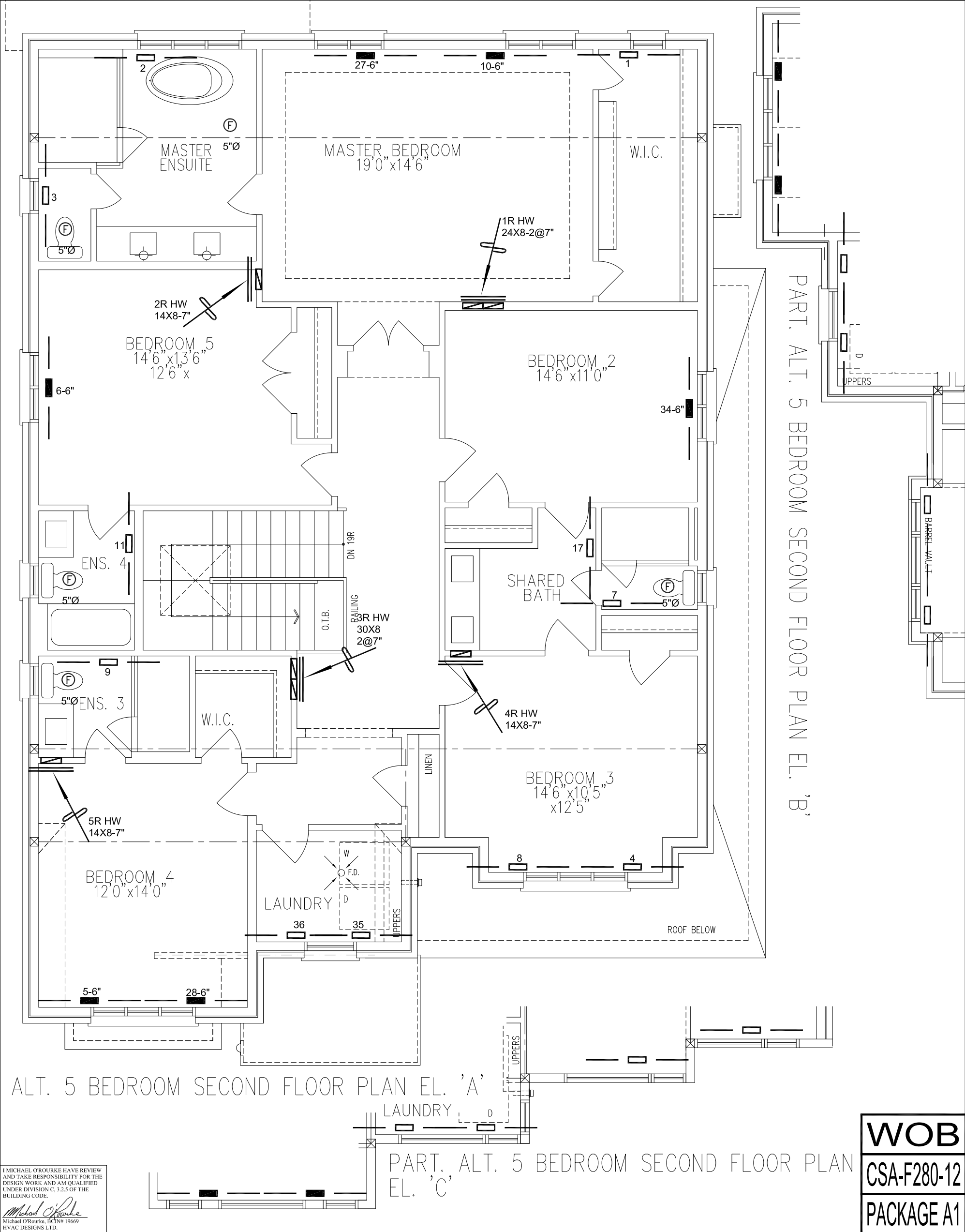
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

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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GOLD PARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	OCT/2022
PINE VALLEY & TESTON VAUGHAN, ONTARIO			Scale	3/16" = 1'-0"
OPT 5 BED - WOB 5009			BCIN# 19669	
3751 sqft			LO#	99152



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

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GOLD PARK HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	OCT/2022
PINE VALLEY & TESTON VAUGHAN, ONTARIO			Scale	3/16" = 1'-0"
OPT 5 BED - WOB			BCIN# 19669	
5009	3751 sqft		LO#	99152