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:** 4204 THE BROOKVALLEY CNR **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.

June 4, 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 — CNR — DATE: Jun-20 — WINTER NATURAL AIR CHANGE RATE 0.340 — HEAT LOSS ΔT °F. 76 — CSA-F280-12
BUILDER: GOLD PARK HOMES — TYPE: 4204 THE BROOKVALLEY — GFA: 3646 — LO# 77469 — SUMMER NATURAL AIR CHANGE RATE 0.114 — HEAT GAIN ΔT °F. 13 — SB-12 PACKAGE A1

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			ENS-2/3						BTH-2					
EXP. WALL			37			36			7			32			44			28			5						0					
CLG. HT.			10			9			9			9			9			9			9						9					
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	370			324			63			288			396			252			45						0					
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN					LOSS	GAIN			
NORTH	21.3	14.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0			
EAST	21.3	37.4	0	0	0	0	0	0	0	0	0	45	958	1683	45	958	1683	0	0	0	10	213	374				0	0	0			
SOUTH	21.3	22.6	0	0	0	45	958	1015	0	0	0	0	0	0	45	958	1015	45	958	1015	0	0	0				0	0	0			
WEST	21.3	37.4	45	958	1683	8	170	299	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	4	149	406	4	149	406	4	149	406	4	149	406				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			
NET EXPOSED WALL	4.5	0.8	325	1450	244	271	1209	204	63	281	47	243	1084	183	306	1366	230	207	924	156	35	156	26				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			
EXPOSED CLG	1.3	0.6	337	432	198	350	449	206	63	81	37	196	252	115	196	252	115	326	418	192	76	98	45				160	205	94			
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0	0	30	82	38	60	165	76	30	82	38	0	0	0				0	0	0			
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	230	587	99	0	0	0	0	0	0	80	204	34				0	0	0			
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0					0					
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0					0					
SUBTOTAL HT LOSS				2840			2786			362			3112			3846			2531			820					205					
SUB TOTAL HT GAIN					2125			1724			84			2523			3525			1807			885						94			
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				
AIR CHANGE HEAT LOSS				827			811			105			906			1120			737			239					60					
AIR CHANGE HEAT GAIN					159			129			6			189			264			135			66						7			
DUCT LOSS				0			0			0			402			0			0			106					0					
DUCT GAIN					0			0			0			364			0			0			95						0			
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0				0		0			
HEAT GAIN APPLIANCES/LIGHTS					685			0			0			685			685			685			0						0			
TOTAL HT LOSS BTU/H				3667			3597			467			4419			4966			3268			1164					265					
TOTAL HT GAIN x 1.3 BTU/H					4483			2409			118			5201			6127			3726			1361						131			

ROOM USE			DIN				KT/GT			LIB			LAUN			PWD			FOY			MUD					LOD			BAS		
EXP. WALL			26				78			50			8			16			22			28					45			194		
CLG. HT.			11				11			11			9			11			20			11					10			10		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	286				858			550			72			176			440			308					450			1628		
GLAZING				LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN				LOSS	GAIN		LOSS	GAIN
NORTH	21.3	14.6	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	3	64	44
EAST	21.3	37.4	0	0	0		0	0	0	38	809	1421	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0
SOUTH	21.3	22.6	42	894	948		42	894	948	42	894	948	0	0	0	0	0	0	58	1234	1309	0	0	0	0			0	0	0	0	0	0
WEST	21.3	37.4	0	0	0		105	2234	3926	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			24	511	897	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		25	631	106	0	0	0	0	0	0	0	0	0	54	1363	230	20	505	85	0			0	0	0	20	505	85
NET EXPOSED WALL	4.5	0.8	244	1089	183		686	3061	516	470	2097	353	72	321	54	176	785	132	328	1464	247	288	1285	216	0			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			246	885	149	312	1123	189
EXPOSED CLG	1.3	0.6	0	0	0		0	0	0	0	0	0	120	154	71	0	0	0	150	193	88	0	0	0	0			0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0		0	0	0	0	0	0	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	15	38	6	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0				0			0			0			0			0			0								6595	
SLAB ON GRADE HEAT LOSS				0				0			0			0			0			0			0					0				
SUBTOTAL HT LOSS				1983				6821			3800			514			785			4254			1790					1396			8287	
SUB TOTAL HT GAIN					1131				5496			2722			131			132			1873			302						1047			318
LEVEL FACTOR / MULTIPLIER			0.30	0.38			0.30	0.38		0.30	0.38		0.20	0.29		0.30	0.38		0.30	0.38		0.30	0.38							0.50	1.28	
AIR CHANGE HEAT LOSS				758				2608			1453			149			300			1626			684								12382	
AIR CHANGE HEAT GAIN					85				411			203			10			10			140			23									102
DUCT LOSS				0				0			0			66			0			0			0								0	
DUCT GAIN					0				0			0			83			0			0			0									0
HEAT GAIN PEOPLE	240		0		0		0		0	0		0	0		0	0		0	0		0	0		0				0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					685				685			685			685			0			0			685						0			685
TOTAL HT LOSS BTU/H				2741				9428			5253			729			1086			5880			2475					1396			20669	
TOTAL HT GAIN x 1.3 BTU/H					2471				8569			4693			1181			185			2617			1312						1360			1436

TOTAL HEAT GAIN BTU/H: 47917 — TONS: 3.99 — LOSS DUE TO VENTILATION LOAD BTU/H: 3181 — STRUCTURAL HEAT LOSS: 71470 — TOTAL COMBINED HEAT LOSS BTU/H: 74651

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 CNR
BUILDER: GOLD PARK HOMES TYPE: 4204 THE BROOKVALLEY DATE: Jun-20 GFA: 3646 LO# 77469

HEATING CFM	1525	COOLING CFM	1525	furnace pressure	0.6
TOTAL HEAT LOSS	71,470	TOTAL HEAT GAIN	47,381	furnace filter	0.05
AIR FLOW RATE CFM	21.34	AIR FLOW RATE CFM	32.19	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	0.03
				min adjusted pressure s/a	0.15

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

^LENNOX AFUE = 96 %
EL296UH090XE48C 90 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	15	10	5
R/A	0	0	5	3	1

All S/A diffusers 4"x10" unless noted otherwise on layout.
All S/A runs 5"Ø unless noted otherwise on layout.

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	ENS	BED-2	BED-3	BED-4	ENS-2/3	BED-2	BED-3	MBR	BTH-2	DIN	KT/GT	KT/GT	KT/GT	LIB	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.83	2.80	0.80	2.21	2.48	1.63	0.58	2.21	2.48	1.83	0.27	2.74	2.36	2.36	2.36	2.63	0.73	1.09	5.88	2.47	4.41	4.41	4.41	4.41
CFM PER RUN HEAT	39	60	17	47	53	35	12	47	53	39	6	58	50	50	50	56	16	23	125	53	94	94	94	94
RM GAIN MBH.	2.24	2.20	0.20	2.60	3.06	1.86	0.68	2.60	3.06	2.24	0.13	2.47	2.14	2.14	2.14	2.35	1.18	0.18	2.62	1.31	0.56	0.56	0.56	0.56
CFM PER RUN COOLING	72	71	7	84	99	60	22	84	99	72	4	80	69	69	69	76	38	6	84	42	18	18	18	18
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.16	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	0.15	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	51	47	47	52	74	45	50	56	63	43	35	26	26	26	43	53	50	34	36	10	41	21	16	52
EQUIVALENT LENGTH	160	200	120	150	200	160	140	160	190	160	150	100	110	110	150	110	170	100	150	140	130	100	100	100
TOTAL EFFECTIVE LENGTH	211	247	167	202	274	205	190	216	253	203	185	126	136	136	193	163	220	134	186	150	171	121	116	152
ADJUSTED PRESSURE	0.08	0.07	0.1	0.08	0.06	0.08	0.09	0.08	0.06	0.08	0.09	0.14	0.13	0.13	0.09	0.11	0.08	0.13	0.08	0.11	0.09	0.13	0.14	0.11
ROUND DUCT SIZE	5	5	4	**6**	**6**	5	4	**6**	**6**	5	4	5	5	5	5	5	4	4	**6**	4	**6**	5	5	5
HEATING VELOCITY (ft/min)	286	441	195	240	270	257	138	240	270	286	69	426	367	367	367	411	184	264	637	608	479	690	690	690
COOLING VELOCITY (ft/min)	529	521	80	428	505	441	252	428	505	529	46	587	507	507	507	558	436	69	428	482	92	132	132	132
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10
TRUNK	E	A	D	C	B	A	C	C	B	E	D	A	D	E	A	B	C	C	C	E	A	E	D	B

RUN #	25	26	27	28	29	30
ROOM NAME	BED-4	LIB	KT/GT	ENS-2/3	WIC	BAS
RM LOSS MBH.	1.63	2.63	2.36	0.58	0.47	4.41
CFM PER RUN HEAT	35	56	50	12	10	94
RM GAIN MBH.	1.86	2.35	2.14	0.68	0.12	0.56
CFM PER RUN COOLING	60	76	69	22	4	18
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.16
ACTUAL DUCT LGH.	50	52	37	45	22	30
EQUIVALENT LENGTH	150	140	150	160	160	120
TOTAL EFFECTIVE LENGTH	200	192	187	205	182	150
ADJUSTED PRESSURE	0.09	0.09	0.09	0.08	0.09	0.11
ROUND DUCT SIZE	5	5	5	4	4	5
HEATING VELOCITY (ft/min)	257	411	367	138	115	690
COOLING VELOCITY (ft/min)	441	558	507	252	46	132
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	B	A	C	E	D

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	382	0.07	10.1	12	x	8	573	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	312	0.06	9.7	12	x	8	468	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	594	0.06	12.4	18	x	8	594	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	1237	0.06	16.3	30	x	8	742	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	285	0.08	8.8	10	x	8	513	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	1230	0.05	17	26	x	10	681
TRUNK Y	515	0.05	12.3	18	x	8	515
TRUNK Z	1000	0.05	15.8	28	x	8	643
DROP	1525	0.05	18.5	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	125	125	125	135	360	165	130	0	0	0	0	0	0	0	230
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.	35	59	61	54	47	26	26	60	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	185	175	195	185	265	205	130	155	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	220	234	256	239	312	231	156	215	1	1	1	1	1	1	1	159
ADJUSTED PRESSURE	0.07	0.06	0.06	0.06	0.05	0.06	0.09	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6.8	6.9	6.9	6.9	7.5	10.3	6.9	6.8	0	0	0	0	0	0	0	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	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: 4204 THE BROOKVALLEY LO # 77469
SITE NAME: PINE VALLEY & TESTON CNR

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES — 9.32.3.1(1)

- a) [✓] Direct vent (sealed combustion) only
- b) [ ] Positive venting induced draft (except fireplaces)
- c) [ ] Natural draft, B-vent or induced draft gas fireplace
- d) [ ] Solid Fuel (including fireplaces)
- e) [ ] No Combustion Appliances

HEATING SYSTEM

[✓] Forced Air [ ] Non Forced Air

[ ] Electric Space Heat

HOUSE TYPE — 9.32.1(2)

- [✓] I Type a) or b) appliance only, no solid fuel
- [ ] II Type I except with solid fuel (including fireplaces)
- [ ] III Any Type c) appliance
- [ ] IV Type I, or II with electric space heat
- [ ] Other: Type I, II or IV no forced air

SYSTEM DESIGN OPTIONS — O.N.H.W.P.

- [ ] 1 Exhaust only/Forced Air System
- [ ] 2 HRV with Ducting/Forced Air System
- [✓] 3 HRV Simplified/connected to forced air system
- [ ] 4 HRV with Ducting/non forced air system
- [ ] Part 6 Design

TOTAL VENTILATION CAPACITY — 9.32.3.3(1)

Basement + Master Bedroom	2	@ 21.2 cfm	42.4	cfm
Other Bedrooms	3	@ 10.6 cfm	31.8	cfm
Kitchen & Bathrooms	5	@ 10.6 cfm	53	cfm
Other Rooms	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.		TOTAL	190.8	cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED — 9.32.3.4.(1)

1	Bedroom	31.8	cfm
2	Bedroom	47.7	cfm
3	Bedroom	63.6	cfm
4	Bedroom	79.5	cfm
5	Bedroom	95.4	cfm
	TOTAL	**79.5**	**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-2/3	QTXEN050C	50	✓	0.3
BTH-2	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: June-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#: 77469 Model: 4204 THE BROOKVALLEY Builder: GOLD PARK HOMES Date: 6/4/2020

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1673	10	16730
First	1673	11	18403
Second	2047	9	18423
Third	0	9	0
Fourth	0	9	0
		Total:	53,556.0 ft³
		Total:	1516.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.340
SUMMER NATURAL AIR CHANGE RATE	0.114

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

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

0.340 x 421.26 x 42 °C x 1.2 = 7258 W

= **24764 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.114 x 421.26 x 7 °C x 1.2 = 411 W

= **1402 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	24,764	9,683	1.279
2	0.3		19,433	0.382
3	0.2		17,016	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

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: 4204 THE BROOKVALLEY CNR **BUILDER:** GOLD PARK HOMES
SFQT: 3646 **LO#** 77469 **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):	53556.0	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: 62.0 ft	WIDTH: 35.0 ft	EXPOSED PERIMETER:	194.0 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

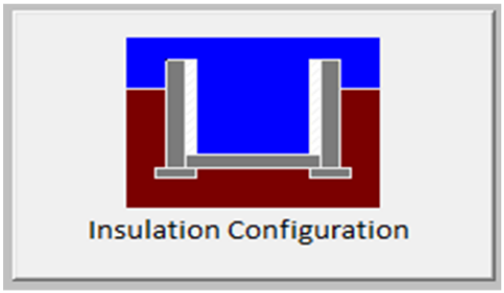
Michael O'Rourke

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):	**18.9**	 Insulation Configuration
Floor Width (m):	**10.7**	
Exposed Perimeter (m):	**0.0**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**2.13**	
Window Area (m^2):	**2.5**	
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):		**1932**

TYPE: 4204 THE BROOKVALLEY CNR
LO# 77469

HVAC Designs Ltd.
375 Finley Ave, Suite 202
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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):	1516.5
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 2021.6 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):	**0.114**

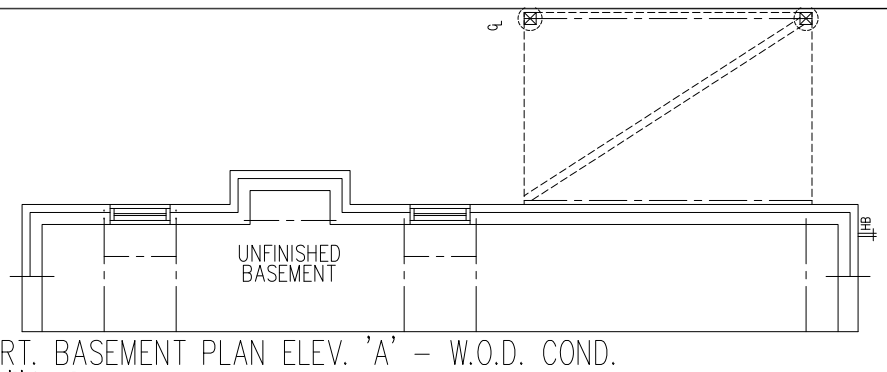
TYPE: 4204 THE BROOKVALLEY CNR

LO# 77469

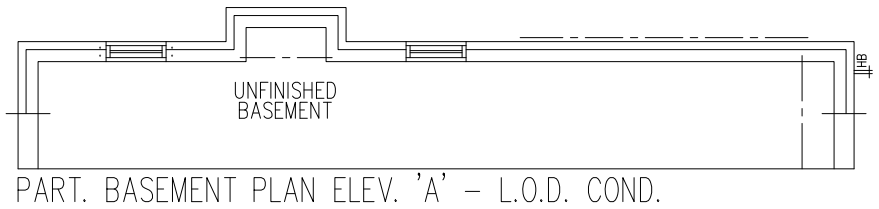
CSA-F280-12	LOD
PACKAGE A1	WOD

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.

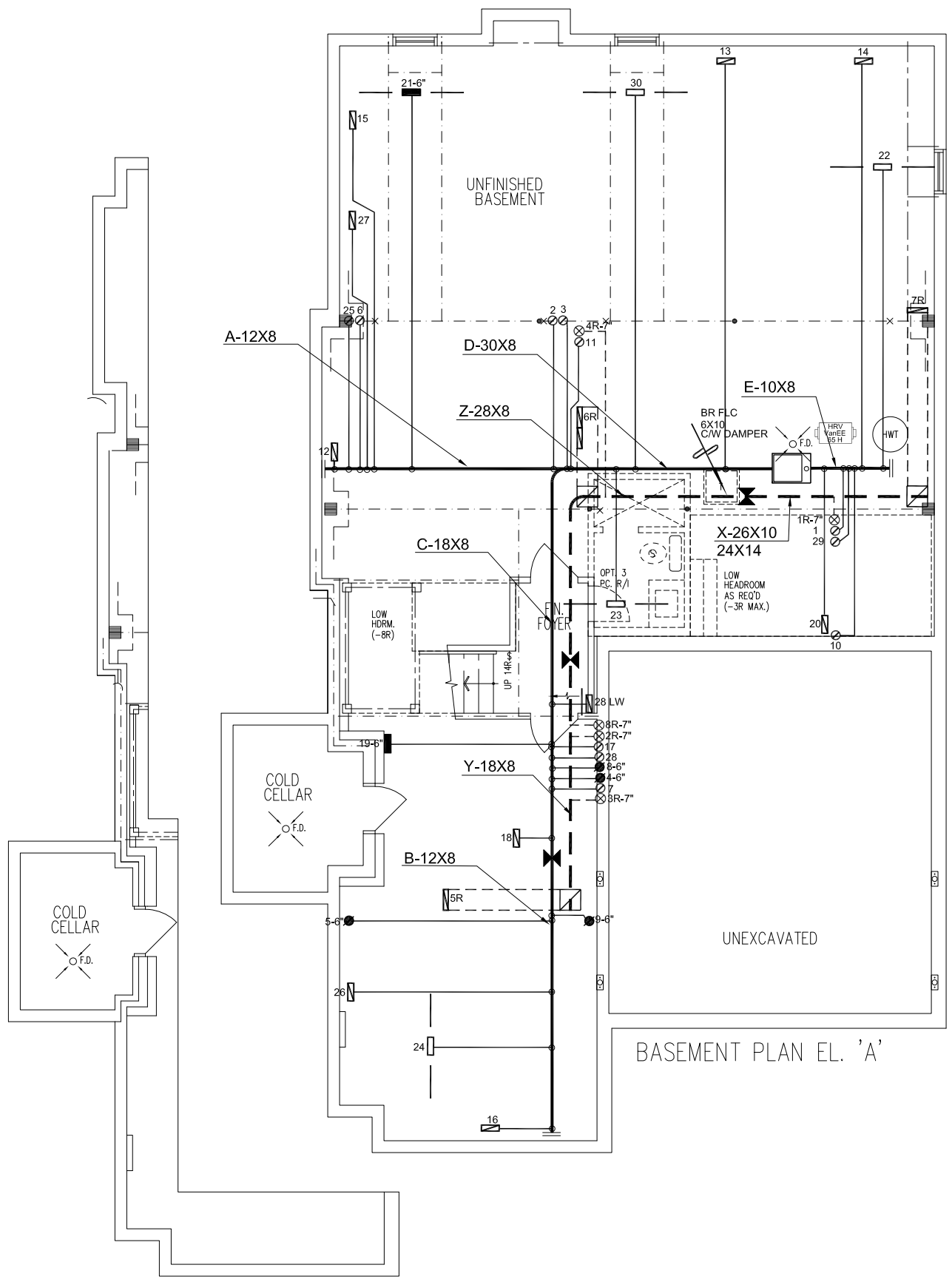
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.



PART. BASEMENT PLAN ELEV. 'A' – W.O.D. COND.
ELEV. 'B' SIMILAR



PART. BASEMENT PLAN ELEV. 'A' – L.O.D. COND.



BASEMENT PLAN EL. 'A'

PARTIAL BASEMENT PLAN, EL. 'B'

HVAC LEGEND

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

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

REVISIONS

Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO

THE BROOKVALLEY
4204 CNR 3646 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 74651 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	15	5	5
1ST FLOOR	10	3	2
BASEMENT	5	1	0

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

Sheet Title
BASEMENT HEATING LAYOUT

Date JAN/2018
Scale 1/8" = 1'-0"
BCIN# 19669
LO# 77469

CSA-F280-12	LOD
PACKAGE A1	WOD

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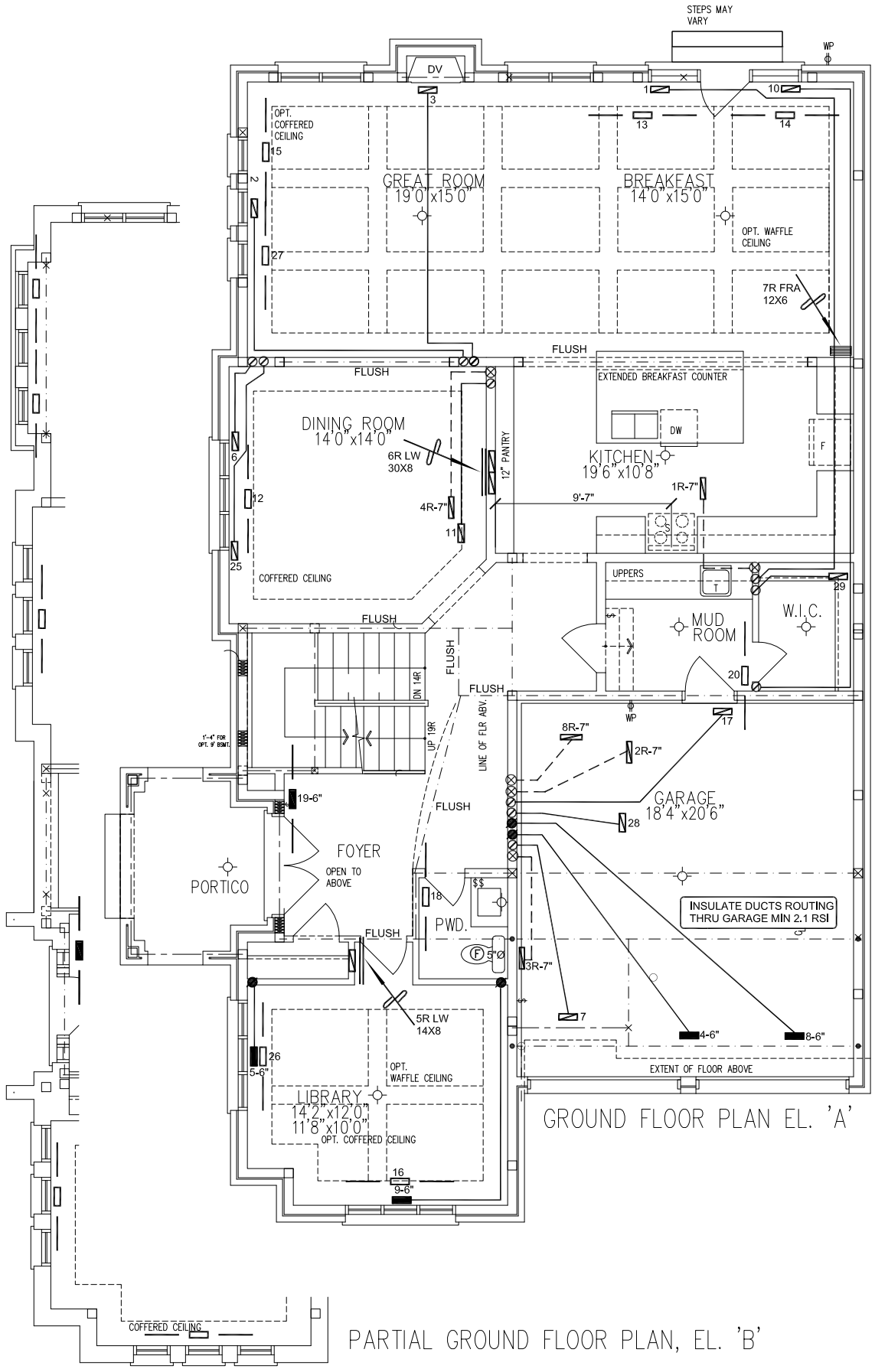

HVAC LEGEND

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
	RETURN AIR STACK ABOVE		RETURN AIR STACK 2nd FLOOR		REDUCER

REVISIONS

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

Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO

THE BROOKVALLEY
4204 CNR 3646 sqft

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Sheet Title
FIRST FLOOR HEATING LAYOUT

Date JAN/2018
Scale 1/8" = 1'-0"
BCIN# 19669
LO# 77469

CSA-F280-12	LOD
PACKAGE A1	WOD

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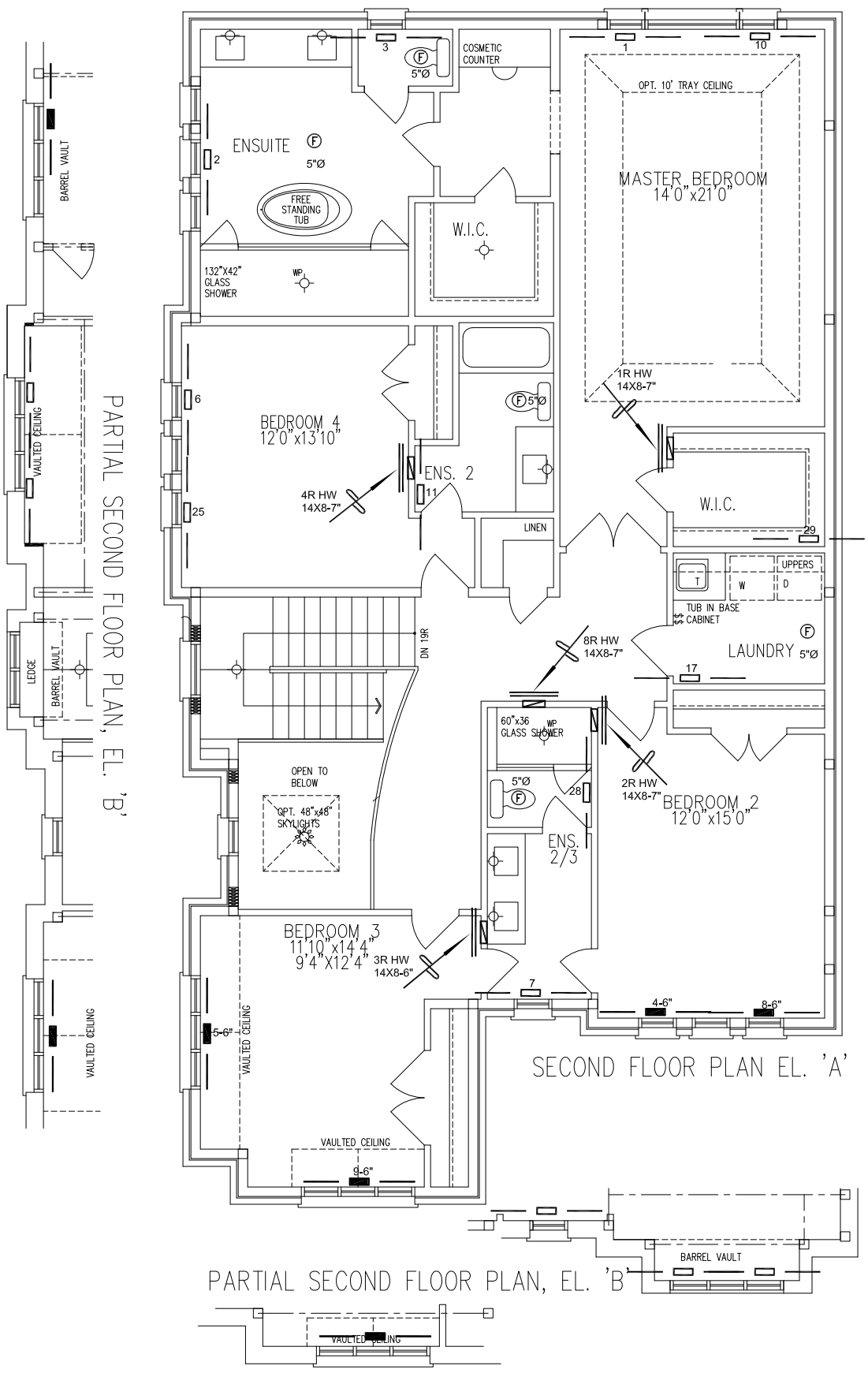

HVAC LEGEND

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

REVISIONS

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

Client
GOLD PARK HOMES

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VAUGHAN, ONTARIO

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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date JAN/2018
Scale 1/8" = 1'-0"
BCIN# 19669
LO# 77469