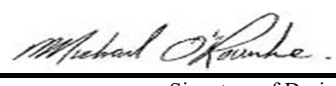


Schedule 1: Designer Information

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: 4204 THE BROOKVALLEY CNR - 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.			
June 4, 2020		 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				CNR - WOB				DATE: Jun-20				WINTER NATURAL AIR CHANGE RATE 0.407				HEAT LOSS ΔT °F. 76				CSA-F280-12			
BUILDER: GOLD PARK HOMES				TYPE: 4204 THE BROOKVALLEY				GFA: 3646				SUMMER NATURAL AIR CHANGE RATE 0.137				HEAT GAIN ΔT °F. 13				SB-12 PACKAGE A1			
ROOM USE	EXP. WALL	CLG. HT.	FACTORS	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2/3						BTH-2							
GRS.WALL AREA	LOSS	GAIN																					
GLAZING	LOSS	GAIN																					
NORTH	21.3	14.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EAST	21.3	37.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	21.3	22.7	0	0	0	45	958	1020	0	0	0	45	958	1020	45	958	1020	0	0	0	0	0	0
WEST	21.3	37.6	45	958	1692	8	170	301	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	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
NET EXPOSED WALL	4.5	0.8	288	1285	216	271	1209	204	63	281	47	243	1084	183	306	1366	230	207	924	156	35	156	26
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
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
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
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
BASEMENT/CRAWL HEAT LOSS																							
SLAB ON GRADE HEAT LOSS																							
SUBTOTAL HT LOSS			2675		2786	362	3112	3846	2531	820													
SUB TOTAL HT GAIN			2106		1731	84	2532	3539	1812	887													
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	0.20	0.35	0.20	0.35
AIR CHANGE HEAT LOSS			941		980	127	1094	1353	890	288													
AIR CHANGE HEAT GAIN			176		145	7	212	296	151	74													
DUCT LOSS			0		0	0	421	0	0	111													
DUCT GAIN			0		0	0	367	0	0	96													
HEAT GAIN PEOPLE	240	2	480	0	0	0	1	240	1	240	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS			685		0	0	685	685	685	685													
TOTAL HT LOSS BTU/H			3616		3766	489	4626	5199	3421	1218													
TOTAL HT GAIN x 1.3 BTU/H			4481		2438	119	5246	6187	3754	1375													

ROOM USE			DIN				KT/GT		LIB		LAUN		PWD		FOY		MUD								WOB		BAS			
EXP. WALL			26				78		50		8		16		22		28								45		149			
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		1043			
GLAZING			LOSS	GAIN			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	14.7	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	37.6	0	0	0		0	0	0	38	809	1429	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
SOUTH	21.3	22.7	42	894	952		42	894	952	42	894	952	0	0	0	58	1234	1315	0	0	0	0	0	0	0	0	0	0	0	
WEST	21.3	37.6	0	0	0		100	2128	3759	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99	2107	1303	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	
DOORS	25.2	4.3	0	0	0		30	757	128	0	0	0	0	0	0	54	1363	230	20	505	85	10	252	43	20	505	85	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	341	1522	256	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	447	1609	271
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
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	15	38	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS					0				0						0															
SLAB ON GRADE HEAT LOSS					0				0						0															
SUBTOTAL HT LOSS				1983				6841		3800		514		785		4254		1790									592			2594
SUB TOTAL HT GAIN					1136				5355		2734		131		132		1880		302								4473		4771	
LEVEL FACTOR / MULTIPLIER		0.30	0.46				0.30	0.46		0.30	0.46		0.20	0.35		0.30	0.46		0.30	0.46							1601		0.50	1.60
AIR CHANGE HEAT LOSS				906				3126			1736			181			359			1944			818						14815	
AIR CHANGE HEAT GAIN					95				447		228		11		11				157				25							167
DUCT LOSS				0				0		0		69		0		0		0				0						0		
DUCT GAIN					0				0		0		83		0			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	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				2889				9967		5536		764		1144		6198		2608									5065		19586	
TOTAL HT GAIN x 1.3 BTU/H					2490				8433		4742		1183		186		2647		1315								2082			162

TOTAL HEAT GAIN BTU/H:

48975

TONS: 4.08

LOSS DUE TO VENTILATION LOAD BTU/H: 3181

STRUCTURAL HEAT LOSS: 76372

TOTAL COMBINED HEAT LOSS BTU/H: 79552



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

CNR - WOB
TYPE: 4204 THE BROOKVALEY

DATE: Jun-20

GFA: 3646 LO# 80235

HEATING CFM 1525 COOLING CFM 1525
TOTAL HEAT LOSS 76,372 TOTAL HEAT GAIN 48,439
AIR FLOW RATE CFM 19.97 AIR FLOW RATE CFM 31.48

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

*LENNOX
EL296UH090XE48C

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

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	15	10	6
R/A	0	0	5	3	1

plenium 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

FAN SPEED 90
LOW 0
MEDLOW 0
MEDIUM 1105
MEDIUM HIGH 1255
HIGH 1525

DESIGN CFM = 1525
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	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	1.81	2.88	0.88	2.31	2.60	1.71	0.61	2.31	2.60	1.81	0.28	2.89	2.49	2.49	2.49	2.77	0.76	1.14	6.20	2.61	4.11	4.11	4.11	4.11
CFM PER RUN HEAT	36	58	18	46	52	34	12	46	52	36	6	58	50	50	50	55	15	23	124	52	82	82	82	82
RM GAIN MBH	2.24	2.22	0.22	2.62	3.09	1.88	0.69	2.62	3.09	2.24	0.13	2.49	2.11	2.11	2.11	2.37	1.18	0.19	2.65	1.32	0.62	0.62	0.62	0.62
CFM PER RUN COOLING	71	70	7	83	97	59	22	83	97	71	4	78	66	66	66	75	37	6	83	41	19	19	19	19
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	5	5	5	5
HEATING VELOCITY (ft/min)	264	426	207	235	265	250	138	235	265	264	69	426	367	367	367	404	172	264	632	597	602	602	602	602
COOLING VELOCITY (ft/min)	521	514	80	423	495	433	252	423	495	521	46	573	485	485	485	551	424	69	423	470	140	140	140	140
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	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	31
ROOM NAME	BED-4	LIB	KT/GT	ENS-2/3	WIC	BAS	BAS
RM LOSS MBH	1.71	2.77	2.49	0.61	0.49	4.11	4.11
CFM PER RUN HEAT	34	55	50	12	10	82	82
RM GAIN MBH	1.88	2.37	2.11	0.69	0.12	0.62	0.62
CFM PER RUN COOLING	59	75	66	22	4	19	19
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.16	0.16
ACTUAL DUCT LGH	50	52	37	45	22	30	36
EQUIVALENT LENGTH	150	140	150	160	160	120	200
TOTAL EFFECTIVE LENGTH	200	192	187	205	182	150	236
ADJUSTED PRESSURE	0.09	0.09	0.09	0.08	0.09	0.11	0.07
ROUND DUCT SIZE	5	5	5	4	4	5	6
HEATING VELOCITY (ft/min)	250	404	367	138	115	602	418
COOLING VELOCITY (ft/min)	433	551	485	252	46	140	97
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	4X10
TRUNK	A	B	A	C	E	D	C

SUPPLY AIR TRUNK SIZE

	TRUNK	STATIC	ROUND	RECT	VELOCITY
	CFM	PRESS.	DUCT	DUCT	(ft/min)
TRUNK A	366	0.07	10	12	x 8 549
TRUNK B	296	0.06	9.6	10	x 8 533
TRUNK C	656	0.06	12.9	20	x 8 590
TRUNK D	1260	0.06	16.4	32	x 8 709
TRUNK E	266	0.08	8.5	8	x 8 599
TRUNK F	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

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
AIR VOLUME	130	125	125	125	135	360	165	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	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	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	185	175	195	185	265	205	130	155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	220	234	256	239	312	231	156	215	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80
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	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	X	X	X	X	X	X	X	X	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	0	0	0	0	0	0	0	0	0

BR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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																	

TYPE: 4204 THE BROOKVALLEY
SITE NAME: PINE VALLEY & TESTON

LO # 80235
CNR - 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>3</u> @ 10.6 cfm <u>31.8</u> cfm	
Kitchen & Bathrooms	<u>5</u> @ 10.6 cfm <u>53</u> cfm	
Other Rooms	<u>6</u> @ 10.6 cfm <u>63.6</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>155</u> cfm	
Required Supplemental Capacity	<u>35.8</u> cfm	

PRINCIPAL EXHAUST FAN CAPACITY			
Model: VANEE 65H	Location: BSMT		
<u>155.0</u> cfm	<u>3.0</u> 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
ENS	QTXEN050C	50	☒
ENS-2/3	QTXEN050C	50	☒
BTH-2	QTXEN050C	50	☒
PWD	QTXEN050C	50	☒

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 @ 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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	June-20

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 80235	Model: 4204 THE BROOKVALLEY	Builder: GOLD PARK HOMES	Date: 6/4/2020																																																									
Volume Calculation			Air Change & Delta T Data																																																									
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.407 x 421.26 x 42 °C x 1.2 = 8684 W = 29631 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.137 x 421.26 x 7 °C x 1.2 = 491 W = 1674 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 155 CFM x 76 °F x 1.08 x 0.25 = 3181 Btu/h			$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 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)																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HL_{airbv} Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{clevel})</th> <th>Air Leakage Heat Loss Multiplier (LF x HL_{airbv} / HL_{clevel})</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.5</td> <td rowspan="5" style="text-align: center;">29,631</td> <td>9,244</td> <td>1.603</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>19,453</td> <td>0.457</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>16,851</td> <td>0.352</td> </tr> <tr> <td>4</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> <tr> <td>5</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> </tbody> </table> *HL_{airbv} = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HL_{airve} = 0					Level	Level Factor (LF)	HL _{airbv} Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HL _{airbv} / HL _{clevel})	1	0.5	29,631	9,244	1.603	2	0.3	19,453	0.457	3	0.2	16,851	0.352	4	0	0	0.000	5	0	0	0.000																														
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4204 THE BROOKVALLEY	CNR - WOB	BUILDER: GOLD PARK HOMES
SFQT: 3646	LO# 80235	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:	149.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	45.0 ft

2012 OBC - COMPLIANCE PACKAGE

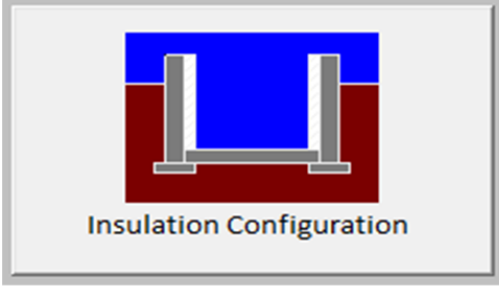
Component	Compliance Package A1	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20 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

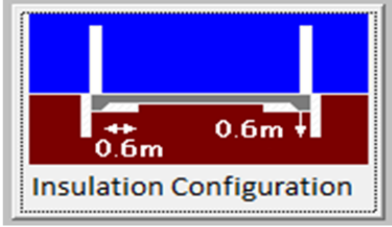
Weather Station Description		
Province:	Ontario	
Region:	Vaughan (Woodbridge)	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	4.6	 Insulation Configuration
Floor Width (m):	10.7	
Exposed Perimeter (m):	45.4	
Wall Height (m):	3.0	
Depth Below Grade (m):	1.81	
Window Area (m ²):	0.3	
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):		760

TYPE: 4204 THE BROOKVALLEY
LO# 80235

CNR - WOB

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):	10.7	
Exposed Perimeter (m):	13.7	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		174

TYPE: 4204 THE BROOKVALLEY
LO# 80235

CNR - WOB

Air Infiltration Residential Load Calculator

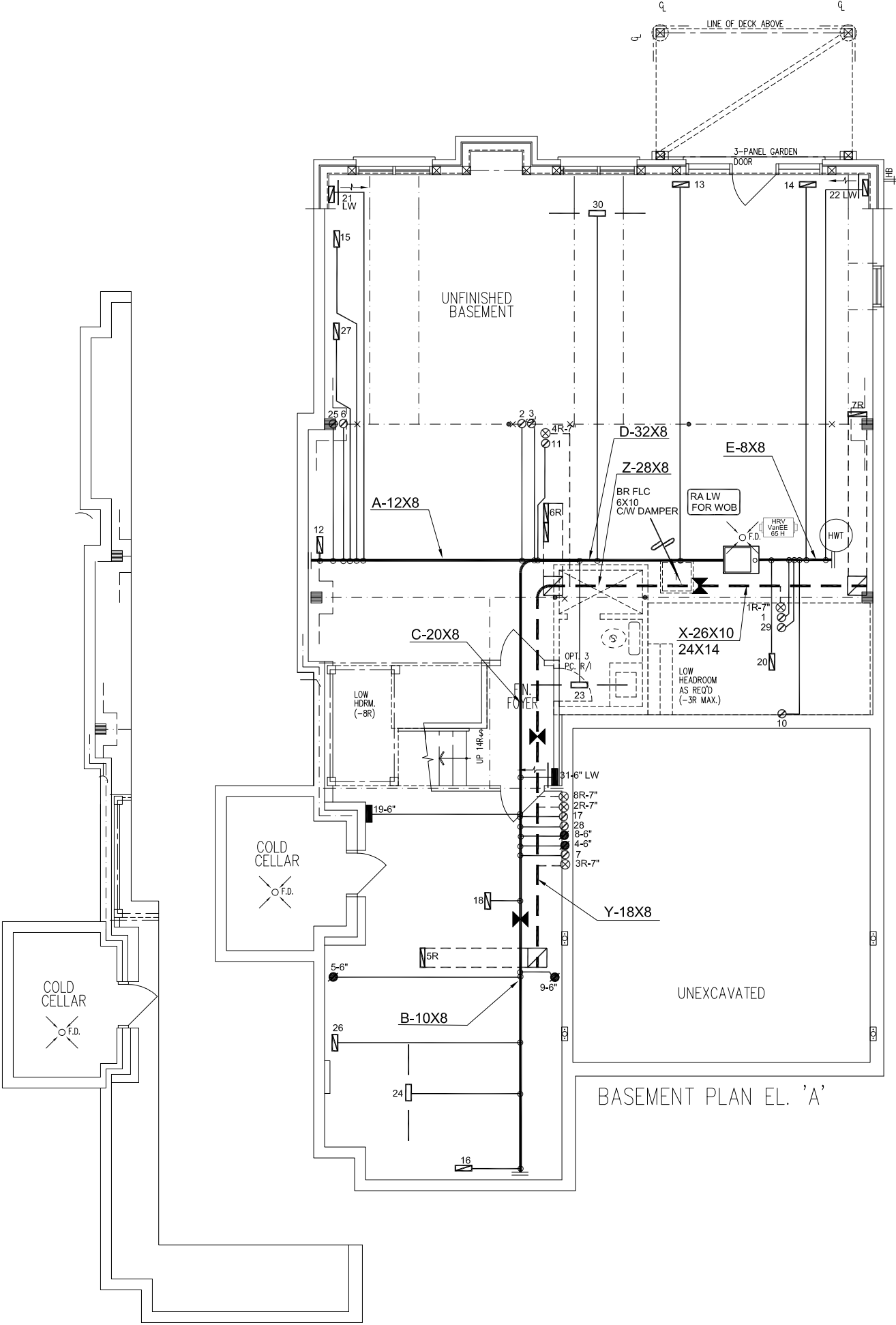
Supplemental tool for CAN/CSA-F280

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):	9.14			
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	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: 4204 THE BROOKVALLEY
LO# 80235

CNR - WOB

HVAC LEGEND										3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.				
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x6" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED AS PER ARCHITECTURALS	JUNE/2020		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x6" 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				



PARTIAL BASEMENT PLAN, EL. 'B'

BASEMENT PLAN EL. 'A'

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

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

CSA-F280-12

WOB

PACKAGE A1

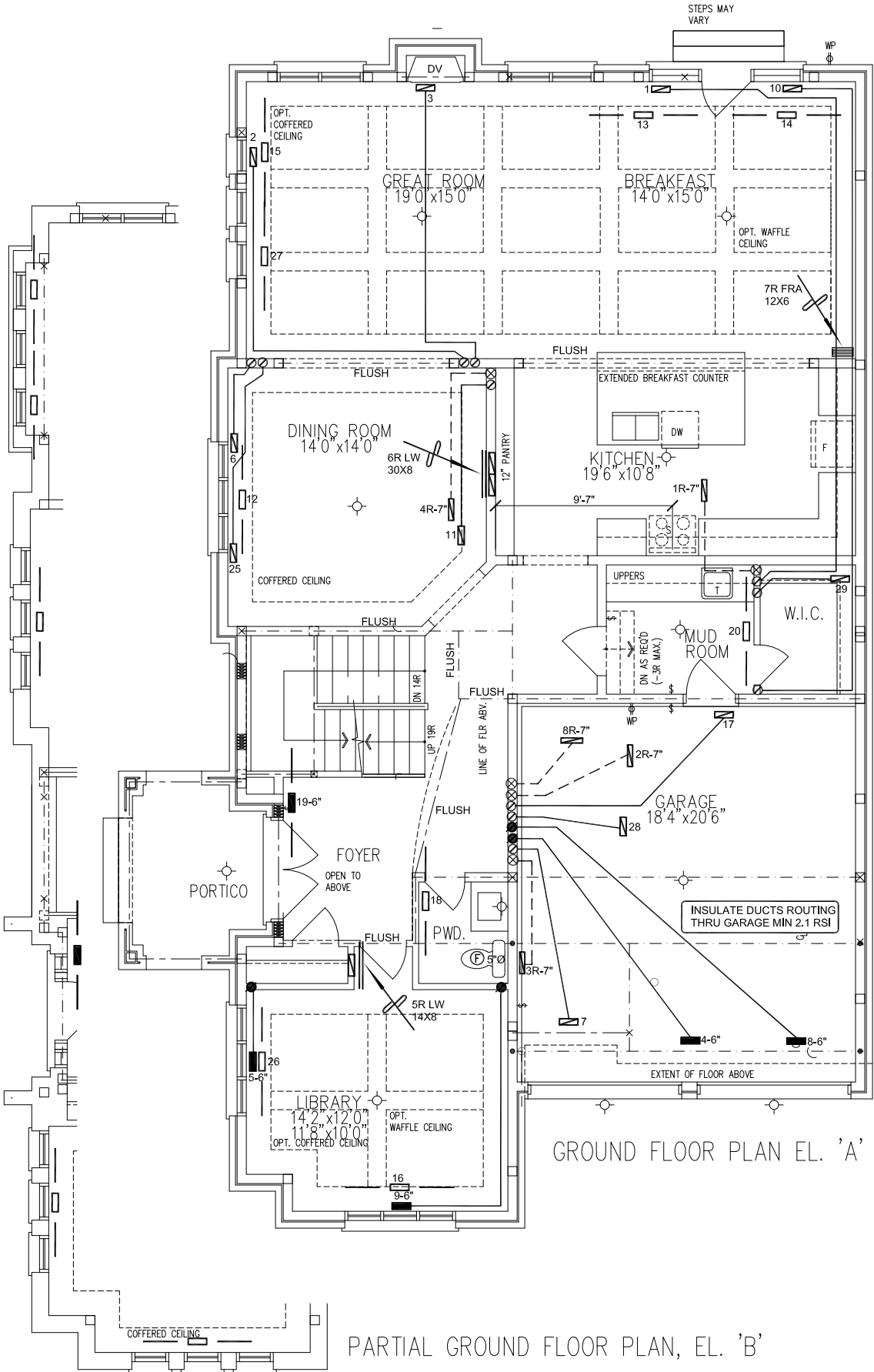
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Client	 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest 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.		HEAT LOSS 79552 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title	
GOLD PARK HOMES	Project Name PINE VALLEY & TESTON VAUGHAN, ONTARIO THE BROOKVALLEY - WOB 4204 CNR 3646 sqft		MAKE LENNOX		3RD FLOOR			BASEMENT HEATING LAYOUT	
MODEL EL296UH090XE48C			2ND FLOOR 15 5 5						
INPUT 88 MBTU/H			1ST FLOOR 10 3 2						
OUTPUT 85 MBTU/H			BASEMENT 6 1 0			Date	OCT/2018		
		COOLING 4.0 TONS		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			Scale	1/8" = 1'-0"	
		FAN SPEED 1525 cfm @ 0.6" w.c.					BCIN# 19669		
							LO#	80235	

HVAC LEGEND		
SYMBOL	DESCRIPTION	SYMBOL
	SUPPLY AIR GRILLE	
	SUPPLY AIR GRILLE 6" BOOT	
	SUPPLY AIR BOOT ABOVE	
	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.	REVISED AS PER ARCHITECTURALS	JUNE/2020

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



CSA-F280-12

WOB

PACKAGE A1

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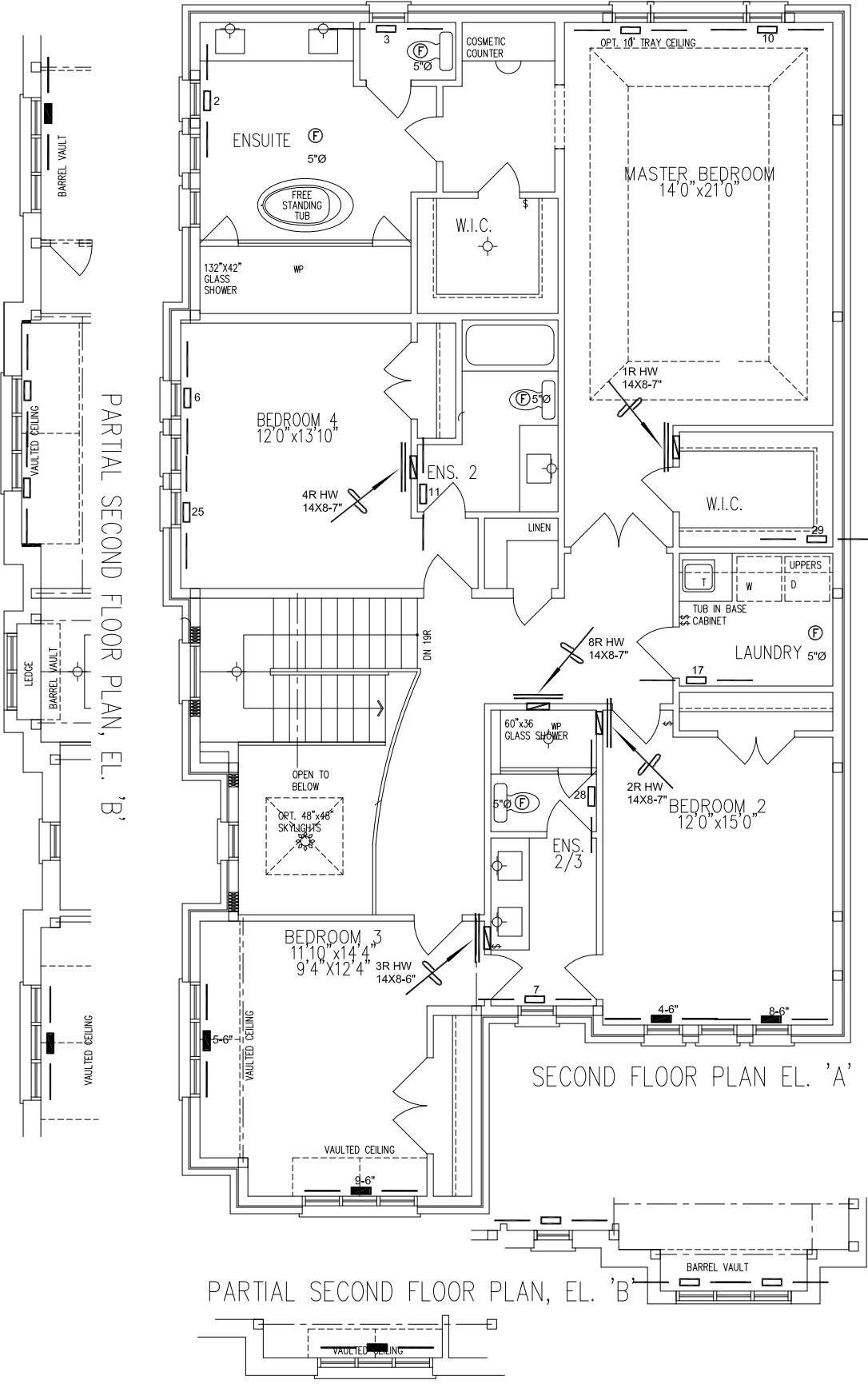
Client	 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title	
GOLD PARK HOMES		FIRST FLOOR HEATING LAYOUT	
Project Name		Date	OCT/2018
PINE VALLEY & TESTON VAUGHAN, ONTARIO		Scale	1/8" = 1'-0"
THE BROOKVALLEY - WOB 4204 CNR	3646 sqft	BCIN# 19669	
		LO#	80235
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.			

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

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Michael O'Rourke

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CSA-F280-12

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GOLD PARK HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name PINE VALLEY & TESTON VAUGHAN, ONTARIO			Date	OCT/2018
THE BROOKVALLEY - WOB 4204 CNR 3646 sqft			Scale	1/8" = 1'-0"
		BCIN# 19669		
		LO#	80235	