

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@hvacdsgns.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 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.			
January 23, 2018 Date		 Signature of Designer	

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
BUILDER: GOLD PARK HOMES
TYPE: 1204 THE BROOKVALEY
DATE: Jan-18
LO# 77469
GFA: 3646
WINTER NATURAL AIR CHANGE RATE 0.340
SUMMER NATURAL AIR CHANGE RATE 0.114
HEAT LOSS AT °F. 76
HEAT GAIN AT °F. 13
CSA-F280-12
SB-12 PACKAGE A1

ROOM USE	EXP. WALL CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2/3	BTH-2	LOSS GAIN
GRS.WALL AREA	333	333	324	63	288	396	252	45	0	0
GLAZING	21.3 16.0	0	0	0	0	0	0	0	0	0
NORTH	21.3 41.6	0	0	0	0	0	0	0	0	0
EAST	21.3 24.9	0	0	0	0	0	0	0	0	0
SOUTH	21.3 24.9	0	0	0	0	0	0	0	0	0
WEST	21.3 41.6	0	0	0	0	0	0	0	0	0
SKYLT.	37.2 101.5	0	0	0	0	0	0	0	0	0
DOORS	25.2 4.3	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.5 0.8	288	246	63	281	47	243	1084	183	306
NET EXPOSED BSMT WALL ABOVE GR	3.6 0.6	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3 0.6	337	432	198	350	449	206	63	81	37
NO ATTIC EXPOSED CLG	2.7 1.3	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS	2.6 0.4	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS	2675	3207	2882	84	2568	3702	2387	523	205	94
SUB TOTAL HT GAIN	0.20 0.30	2284	0.20 0.30	107	880	1098	708	200	0.20 0.30	61
LEVEL FACTOR / MUL TIPLIER	794	951	209	6	167	248	109	38	0	7
AIR CHANGE HEAT LOSS	0	0	0	0	0	0	0	0	0	0
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0	0	0	0
DUCT LOSS	0	0	0	0	0	0	0	0	0	0
DUCT GAIN	0	0	0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	240	2	480	0	1	240	1	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	685	685	0	0	685	685	685	0	0	0
TOTAL HT LOSS BTU/H	3469	4158	4019	469	4233	4801	3096	964	266	131
TOTAL HT GAIN x 1.3 BTU/H	4699	4699	4699	469	4699	4699	4699	4699	4699	4699

ROOM USE	EXP. WALL CLG. HT.	DIN	KT/IGT	LIB	LAUN	PWD	FOY	MUD	BAS	LOSS GAIN
GRS.WALL AREA	286	286	858	550	72	176	440	308	1388	0
GLAZING	21.3 16.0	0	0	0	0	0	0	0	12	255
NORTH	21.3 41.6	0	0	0	0	0	0	0	0	0
EAST	21.3 24.9	0	0	0	0	0	0	0	0	0
SOUTH	21.3 24.9	0	0	0	0	0	0	0	0	0
WEST	21.3 41.6	0	0	0	0	0	0	0	0	0
SKYLT.	37.2 101.5	0	0	0	0	0	0	0	0	0
DOORS	25.2 4.3	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.5 0.8	244	586	306	516	470	328	288	20	605
NET EXPOSED BSMT WALL ABOVE GR	3.6 0.6	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3 0.6	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
BASEMENT/CRAWL HEAT LOSS	2.6 0.4	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS	1883	1229	6801	6217	514	785	4254	1790	9518	629
SUB TOTAL HT GAIN	0.30 0.38	0.30 0.38	0.30 0.38	0.30 0.38	0.20 0.30	0.30 0.38	0.30 0.38	0.30 0.38	0.50	1.30
LEVEL FACTOR / MUL TIPLIER	759	759	2603	1454	152	301	1628	685	12382	353
AIR CHANGE HEAT LOSS	0	0	0	0	0	0	0	0	0	0
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0	0	0	0
DUCT LOSS	0	0	0	0	0	0	0	0	0	0
DUCT GAIN	0	0	0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	685	685	685	685	685	685	685	685	0	0
TOTAL HT LOSS BTU/H	2741	2741	9404	5254	733	1086	5882	2475	21900	685
TOTAL HT GAIN x 1.3 BTU/H	2604	2604	9559	5042	1180	184	2800	1311	1758	1758

TOTAL HEAT GAIN BTU/H: 48880 TONS: 4.07 LOSS DUE TO VENTILATION LOAD BTU/H: 3181 STRUCTURAL HEAT LOSS: 70931 TOTAL COMBINED HEAT LOSS BTU/H: 74112

Michael O'Rourke

SITE NAME: PINE VALLEY & TESTON
BUILDER: GOLD PARK HOMES
TYPE: 4204 THE BROOKVALEY
DATE: Jan-18
CNR
furnace pressure 0.6
furnace filter 0.2
a/c coil pressure 0.2
available pressure 0.35
for s/a & r/a
plenum pressure s/a 0.18
max s/a diff press. loss 0.03
min adjusted pressure s/a 0.15

HEATING CFM		1525	COOLING CFM		1525	furnace pressure		0.6	^LENNOX			
TOTAL HEAT LOSS		70.931	TOTAL HEAT GAIN		48.345	furnace filter		0.05	EL296UH090XE48C			
AIR FLOW RATE CFM		21.5	AIR FLOW RATE CFM		31.54	a/c coil pressure		0.2	90		AFUE = 96 %	
						available pressure			FAN SPEED		INPUT (BTU/H) = 88,000	
						for s/a & r/a		0.35	LOW		OUTPUT (BTU/H) = 85,000	
RUN COUNT		4th	3rd	2nd	1st	Bas			MEDLOW		DESIGN CFM = 1525	
S/A		0	0	15	10	5			MEDIUM		CFM @ .6" E.S.P.	
R/A		0	0	5	3	1			MEDIUM HIGH			
							plenum pressure s/a	0.18	HIGH			
							max s/a dirt 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				
											TEMPERATURE RISE	
											52	
											°F	

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

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

ROOM NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
MBR	ENS	ENS	ENS	ENS	BED-3	BED-2	BED-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	1.73	3.08	1.08	1.08	2.12	2.12	2.40	1.73	2.40	1.73	0.27	2.74	2.35	2.35	2.35	2.35	0.73	1.09	5.88	4.38	4.38	4.38	4.38	4.38
CFM PER RUN HEAT	37	66	23	46	52	46	52	37	52	37	6	59	51	51	51	56	16	23	126	53	94	94	94	94
RM GAIN MBH	2.35	3.01	1.01	2.43	2.98	1.65	0.40	2.43	2.98	2.35	0.13	2.80	2.39	2.39	2.39	2.52	1.18	0.18	2.80	1.31	0.35	0.35	0.35	0.35
CFM PER RUN COOLING	74	95	32	77	94	52	13	77	94	74	4	82	75	75	75	80	37	6	88	41	11	11	11	11
ADJUSTED PRESSURE	0.17	0.16	0.17	0.17	0.16	0.17	0.17	0.16	0.17	0.17	0.17	0.16	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	36	52	74	45	50	56	63	43	35	26	26	26	26	43	50	34	36	10	41	21	16	52
EQUIVALENT LENGTH	160	200	120	150	200	160	140	160	190	160	150	100	110	110	110	150	170	100	150	140	130	100	100	100
TOTAL EFFECTIVE LENGTH	211	247	156	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	0.11	0.09	0.06	0.08	0.09	0.08	0.06	0.08	0.09	0.13	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	6	4	5	6	5	4	5	6	5	4	5	5	5	5	5	4	4	6	4	6	5	5	5
HEATING VELOCITY (ft/min)	272	337	264	338	265	242	115	338	265	272	69	433	374	374	374	374	411	184	642	608	479	690	690	690
COOLING VELOCITY (ft/min)	543	484	387	565	479	382	149	565	479	543	46	602	551	551	551	587	424	69	449	470	56	81	81	81
OUTLET GRILL SIZE	3X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	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

ROOM NAME	25	26	27	28	29	30
MBR	LIB	WIC	BAS	BAS	BAS	BAS
RM LOSS MBH	1.55	2.63	2.35	0.48	0.47	4.38
CFM PER RUN HEAT	33	56	51	10	94	94
RM GAIN MBH	1.65	2.52	2.39	0.40	0.12	0.35
CFM PER RUN COOLING	52	80	75	13	4	11
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	4	5	5	4	4	5
HEATING VELOCITY (ft/min)	379	411	374	115	115	690
COOLING VELOCITY (ft/min)	597	587	551	149	46	81
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	B	A	C	E	D

SUPPLY AIR TRUNK SIZE	TRUNK	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	387	0.07	10.2	12	581	0	0.00	0	0	0
TRUNK B	310	0.06	9.7	12	465	0	0.00	0	0	0
TRUNK C	587	0.06	12.3	18	587	0	0.00	0	0	0
TRUNK D	1242	0.06	16.3	30	745	0	0.00	0	0	0
TRUNK E	282	0.08	8.7	10	508	0	0.00	0	0	0
TRUNK F	0	0.00	0	0	0	0	0.00	0	0	0

RETURN AIR TRUNK SIZE	TRUNK	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK G	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK H	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK I	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK J	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK K	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK L	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK M	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK N	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK O	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK P	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK Q	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK R	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK S	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK T	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK U	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK V	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK W	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK X	1230	0.05	17	26	681	1230	0.05	17	26	681
TRUNK Y	515	0.05	12.3	18	515	515	0.05	12.3	18	515
TRUNK Z	1000	0.05	15.8	28	1000	1000	0.05	15.8	28	1000
DROP	1525	0.05	18.5	24	1525	1525	0.05	18.5	24	1525

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

LO # 77469
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	☒ 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:	January-18

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																					
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																					
LO#: 77469	Model: 4204 THE BROOKVALLEY	Builder: GOLD PARK HOMES	Date: 01/23/2018																																																																		
Volume Calculation		Air Change & Delta T Data																																																																			
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> <tr> <td>Bsmt</td> <td>1673</td> <td>10</td> <td>16730</td> </tr> <tr> <td>First</td> <td>1673</td> <td>11</td> <td>18403</td> </tr> <tr> <td>Second</td> <td>2047</td> <td>9</td> <td>18423</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>53,556.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>1516.5 m³</td> </tr> </table>		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	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">WINTER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.340</td> </tr> <tr> <td colspan="2" style="text-align: center;">SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.114</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="4" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> </tr> <tr> <td>Winter DTDh</td> <td>22</td> <td>-20</td> <td>42</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>31</td> <td>7</td> </tr> <tr> <td></td> <td></td> <td></td> <td>ΔT °F</td> </tr> <tr> <td></td> <td></td> <td></td> <td>76</td> </tr> <tr> <td></td> <td></td> <td></td> <td>13</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE		0.340	SUMMER NATURAL AIR CHANGE RATE		0.114	Design Temperature Difference					Tin °C	Tout °C	ΔT °C	Winter DTDh	22	-20	42	Summer DTDc	24	31	7				ΔT °F				76				13
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																																		
Bsmt	1673	10	16730																																																																		
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Third	0	9	0																																																																		
Fourth	0	9	0																																																																		
Total:			53,556.0 ft³																																																																		
Total:			1516.5 m³																																																																		
WINTER NATURAL AIR CHANGE RATE		0.340																																																																			
SUMMER NATURAL AIR CHANGE RATE		0.114																																																																			
Design Temperature Difference																																																																					
	Tin °C	Tout °C	ΔT °C																																																																		
Winter DTDh	22	-20	42																																																																		
Summer DTDc	24	31	7																																																																		
			ΔT °F																																																																		
			76																																																																		
			13																																																																		
5.2.3.1 Heat Loss due to Air Leakage																																																																					
$HL_{air-b} = LR_{air-b} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$																																																																					
0.340	x	421.26	x																																																																		
		42 °C	x																																																																		
		1.2	x																																																																		
			=																																																																		
			7258 W																																																																		
			=																																																																		
			24764 Btu/h																																																																		
5.2.3.2 Heat Loss due to Mechanical Ventilation																																																																					
$HL_{vair-b} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																																					
155 CFM	x	76 °F	x																																																																		
		1.08	x																																																																		
		0.25	x																																																																		
			=																																																																		
			3181 Btu/h																																																																		
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																																					
$HL_{airr} = Level Factor \times HL_{air-bv} \times \{ (HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel}) \}$																																																																					
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>Hlaivr Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{clevel})</th> <th>Air Leakage Heat Loss Multiplier (LF x Hlaivr / HLlevel)</th> </tr> <tr> <td>1</td> <td>0.5</td> <td rowspan="5" style="text-align: center; vertical-align: middle;">24,764</td> <td>9,518</td> <td>1.301</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>19,413</td> <td>0.383</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>16,696</td> <td>0.297</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> </table>				Level	Level Factor (LF)	Hlaivr Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x Hlaivr / HLlevel)	1	0.5	24,764	9,518	1.301	2	0.3	19,413	0.383	3	0.2	16,696	0.297	4	0	0	0.000	5	0	0	0.000																																								
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*Hlaivr = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system Hlaivr = 0																																																																					

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 (ft³):	53556.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
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: 62.0 ft	WIDTH: 35.0 ft	EXPOSED PERIMETER:	194.0 ft

2012 OBC - COMPLIANCE PACKAGE

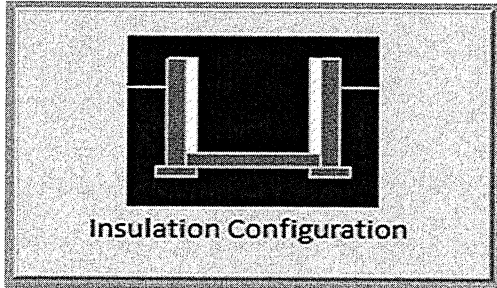
Component	Compliance Package A1	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20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



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):	1.1	
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):		1952

TYPE: 4204 THE BROOKVALLEY
LO# 77469

CNR

Air Infiltration Residential Load Calculator

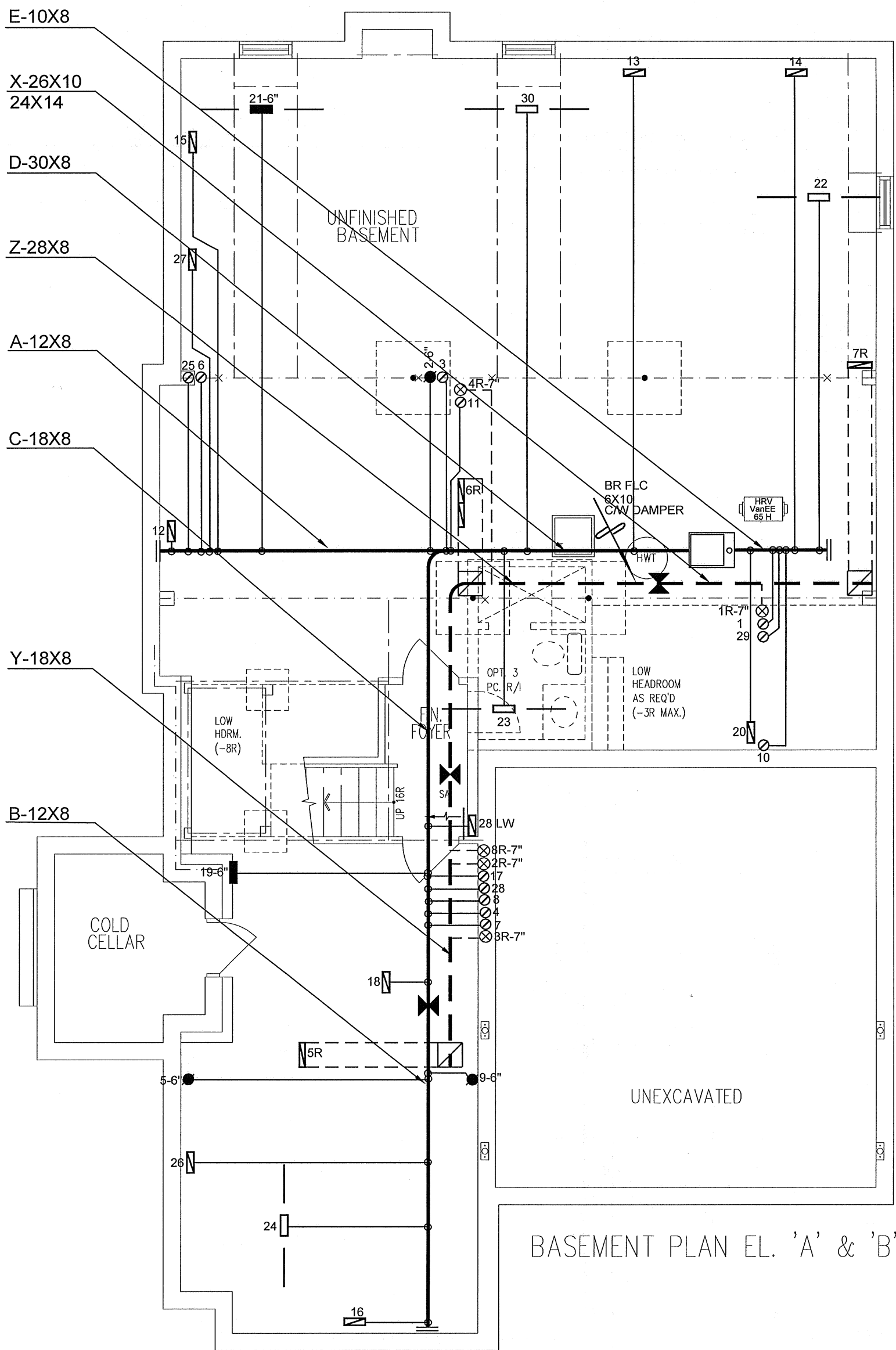
Supplemental tool for CAN/CSA-F280

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	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):	0.340		
Cooling Air Leakage Rate (ACH/H):	0.114		

PACKAGE A1

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, BCIN# 19669
HVAC DESIGNS LTD.



BASEMENT PLAN EL. 'A' & 'B'

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

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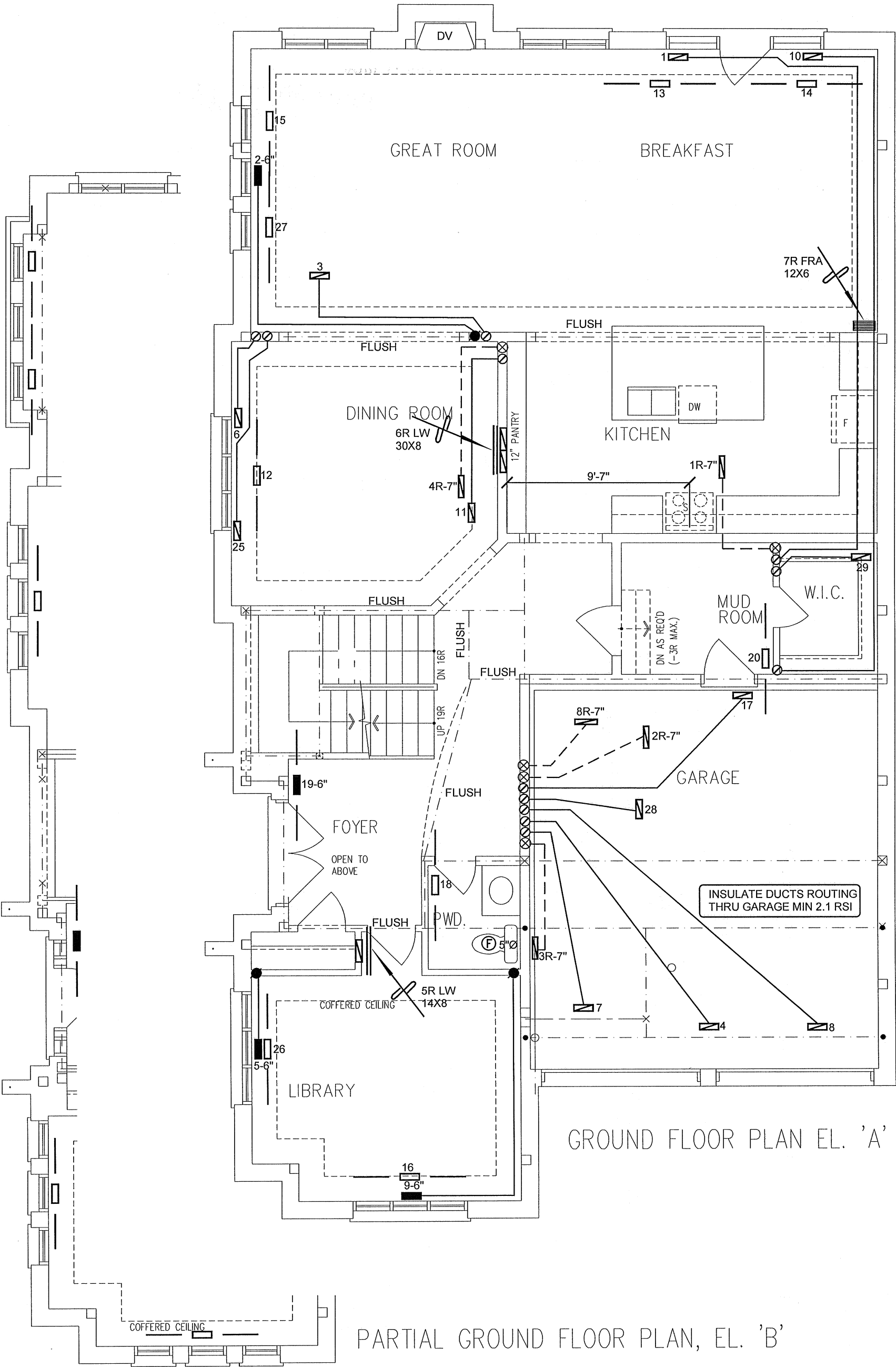
Client		HVAC DESIGNS LTD. 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	HEAT LOSS 74112 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title	
GOLD PARK HOMES			MAKE LENNOX	3RD FLOOR				BASEMENT HEATING LAYOUT	
Project Name PINE VALLEY & TESTON VAUGHAN, ONTARIO			MODEL EL296UH090XE48C	2ND FLOOR	15	5	5		
			INPUT 88 MBTU/H	1ST FLOOR	10	3	2		
			OUTPUT 85 MBTU/H	BASEMENT	5	1	0	Date	JAN/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	3/16" = 1'-0"	
		FAN SPEED 1525 cfm @ 0.6" w.c.					BCIN# 19669		
THE BROOKVALLEY 4204 CNR 3646 sqft		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.		LO#		77469			

CSA-F280-12
PACKAGE A1

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		
SYMBOL	DESCRIPTION	
	SUPPLY AIR GRILLE	1.
	SUPPLY AIR BOOT ABOVE	
	SUPPLY AIR STACK FROM 2nd FLOOR	
	SUPPLY AIR STACK 2nd FLOOR	
	FRA- FLOOR RETURN AIR GRILLE	
	RETURN AIR STACK ABOVE	
	RETURN AIR STACK 2nd FLOOR	
	REDUCER	
REVISIONS		
No.	Description	Date



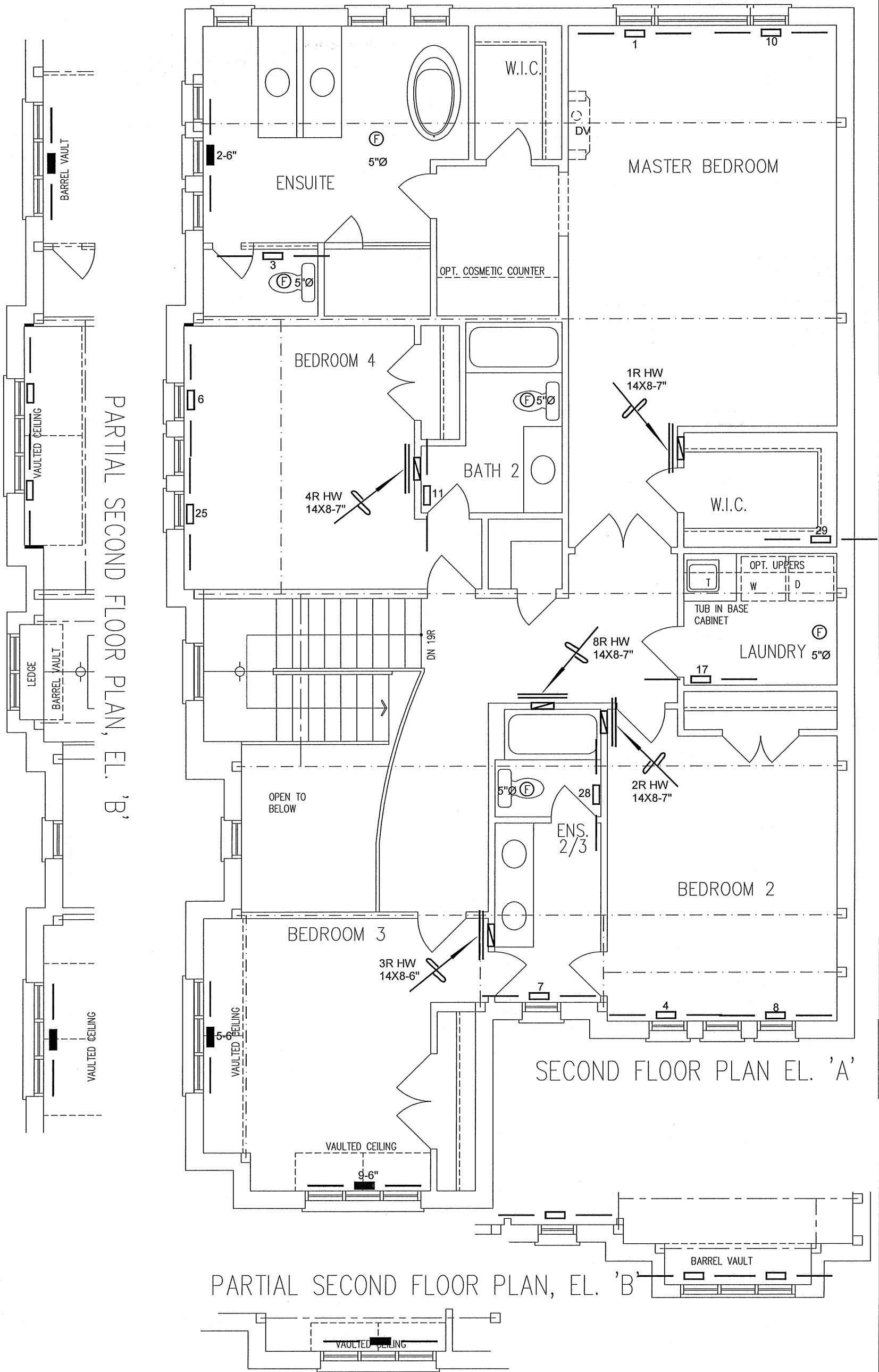
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Client		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title	
GOLD PARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name		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.	Date	JAN/2018
PINE VALLEY & TESTON VAUGHAN, ONTARIO			Scale	3/16" = 1'-0"
THE BROOKVALLEY			BCIN# 19669	
4204 CNR			LO#	77469
3646 sqft				

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Michael O'Rourke, BCIN# 19669
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GOLD PARK HOMES		SECOND FLOOR HEATING LAYOUT	
Project Name		Date	JAN/2018
PINE VALLEY & TESTON VAUGHAN, ONTARIO		Scale	3/16" = 1'-0"
THE BROOKVALLEY 4204 CNR 3646 sqft		BCIN# 19669	
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.		LO#	77469