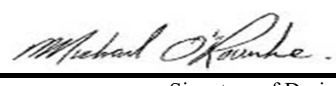


Schedule 1: Designer Information

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: 4008 THE HILLSDALE 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.			
February 26, 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

ROOM USE			GT/DN			KIT			LAUN			W/R			FOY			MUD									LOD			BAS					
EXP. WALL			55			36			30			16			49			28									17			176					
CLG. HT.			11			11			9			11			11			12									10			10					
FACTORS																																			
GRS.WALL AREA			LOSS GAIN			605			396			270			176			539			336									170			1283		
GLAZING			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN									LOSS GAIN			LOSS GAIN		
NORTH			21.3	16.0	36	766	575	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
EAST			21.3	41.6	0	0	0	0	0	0	42	894	1745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
SOUTH			21.3	24.9	0	0	0	24	511	598	10	213	249	10	213	249	0	0	0	0	0	0	0	0	0	0	0	0	4	85	100				
WEST			21.3	41.6	48	1021	1994	58	1234	2410	0	0	0	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	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	10	252	43	0	0	0	0	0	0	46	1161	196	20	505	85	0	0	0	0	20	505	85	0	0				
NET EXPOSED WALL			4.5	0.8	521	2325	392	304	1357	228	218	973	164	166	741	125	493	2200	371	316	1410	238	0	0	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	82	295	50	477	1716	289	0	0					
EXPOSED CLG			1.3	0.6	0	0	0	0	0	0	147	189	86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
NO ATTIC EXPOSED CLG			2.7	1.3	10	27	13	0	0	0	55	151	69	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
BASEMENT/CRAWL HEAT LOSS																																			
SLAB ON GRADE HEAT LOSS																																			
SUBTOTAL HT LOSS																																			
SUB TOTAL HT GAIN																																			
LEVEL FACTOR / MULTIPLIER			0.30	0.43				0.30	0.43		0.20	0.28		0.30	0.43		0.30	0.43		0.30	0.43						0.50	1.10							
AIR CHANGE HEAT LOSS																																			
AIR CHANGE HEAT GAIN																																			
DUCT LOSS																																			
DUCT GAIN																																			
HEAT GAIN PEOPLE			240																																
HEAT GAIN APPLIANCES/LIGHTS																																			
TOTAL HT LOSS BTU/H																																			
TOTAL HT GAIN x 1.3 BTU/H																																			

TOTAL COMBINED HEAT LOSS BTU/H: 58700

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

TYPE: 4008

DATE: Feb-20

GFA: 2716 LO# 85233

HEATING CFM 1100 COOLING CFM 1100
TOTAL HEAT LOSS 57,069 TOTAL HEAT GAIN 36,043
AIR FLOW RATE CFM 19.28 AIR FLOW RATE CFM 30.52

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

EL296UH070XE36B
^LENNOX 70

AFUE = 96 %
INPUT (BTU/H) = 66,000
OUTPUT (BTU/H) = **64,000**

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	12	7	4
R/A	0	0	4	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

FAN SPEED
LOW 0
MEDLOW 0
MEDIUM 995
MEDIUM HIGH 1100
HIGH 0

DESIGN CFM = **1100**
CFM @ .6" E.S.P.

TEMPERATURE RISE **54** °F

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

RUN #	1	2	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	BED-2	BED-3	BED-4	ENS-2	BED-3	ENS-2/3	MBR	ENS-2/3	GT/DN	GT/DN	KIT	KIT	LAUN	LAUN	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.83	1.91	1.67	1.78	2.08	0.74	1.78	1.03	1.83	1.03	2.96	2.96	2.39	2.39	1.54	1.54	1.36	4.80	2.73	4.67	4.67	4.67	4.67
CFM PER RUN HEAT	35	37	32	34	40	14	34	20	35	20	57	57	46	46	30	30	26	93	53	90	90	90	90
RM GAIN MBH	2.17	1.50	2.12	2.84	2.58	0.41	2.84	0.54	2.17	0.54	2.53	2.53	2.75	2.75	2.07	2.07	0.52	0.79	0.45	0.47	0.47	0.47	0.47
CFM PER RUN COOLING	66	46	65	87	79	12	87	16	66	16	77	77	84	84	63	63	16	24	14	14	14	14	14
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	46	43	41	51	36	48	55	52	57	58	26	32	36	43	58	56	27	48	18	22	26	24	45
EQUIVALENT LENGTH	160	150	170	160	150	170	170	190	160	180	100	90	140	150	180	170	120	120	160	150	160	100	110
TOTAL EFFECTIVE LENGTH	206	193	211	211	186	218	225	242	217	238	126	122	176	193	238	226	147	168	178	172	186	124	155
ADJUSTED PRESSURE	0.08	0.09	0.08	0.08	0.09	0.08	0.07	0.07	0.08	0.07	0.14	0.14	0.09	0.08	0.07	0.08	0.12	0.1	0.1	0.09	0.09	0.13	0.1
ROUND DUCT SIZE	5	4	6	6	6	4	6	4	5	4	5	5	6	6	6	5	4	6	5	6	6	6	6
HEATING VELOCITY (ft/min)	257	424	163	173	204	161	173	229	257	229	419	419	235	235	153	220	298	474	389	459	459	459	459
COOLING VELOCITY (ft/min)	485	528	331	444	403	138	444	184	485	184	565	565	428	428	321	463	184	122	103	71	71	71	71
OUTLET GRILL SIZE	3X10	3X10	4X10	4X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	C	B	A	B	B	A	A	C	A	C	C	C	C	A	A	B	A	B	C	C	B	A

RUN #	ROOM NAME	RM LOSS MBH	CFM PER RUN HEAT	RM GAIN MBH	CFM PER RUN COOLING	ADJUSTED PRESSURE	ACTUAL DUCT LGH	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	ROUND DUCT SIZE	HEATING VELOCITY (ft/min)	COOLING VELOCITY (ft/min)	OUTLET GRILL SIZE	TRUNK
1	MBR	1.83	35	2.17	66	0.17	46	160	206	0.08	5	257	485	3X10	C
2	ENS	1.91	37	1.50	46	0.17	43	150	193	0.09	4	424	528	3X10	C
4	BED-2	1.67	32	2.12	65	0.17	41	170	211	0.08	6	163	331	4X10	B
5	BED-3	1.78	34	2.84	87	0.16	51	160	211	0.08	6	173	444	4X10	A
6	BED-4	2.08	40	2.58	79	0.17	36	150	186	0.09	6	204	403	4X10	B
7	ENS-2	0.74	14	0.41	12	0.17	48	170	218	0.08	4	161	138	3X10	B
8	BED-3	1.78	34	2.84	87	0.16	55	170	225	0.07	6	173	444	4X10	A
9	ENS-2/3	1.03	20	0.54	16	0.17	52	190	242	0.07	4	229	184	3X10	A
10	MBR	1.83	35	2.17	66	0.17	46	160	217	0.08	5	257	485	3X10	C
11	ENS-2/3	1.03	20	0.54	16	0.17	58	180	238	0.07	4	229	184	3X10	A
12	GT/DN	2.96	57	2.53	77	0.17	26	100	126	0.14	5	419	565	3X10	C
13	GT/DN	2.96	57	2.53	77	0.17	32	90	122	0.14	5	419	565	3X10	C
14	KIT	2.39	46	2.75	84	0.16	36	140	176	0.09	6	235	428	4X10	C
15	KIT	2.39	46	2.75	84	0.16	43	150	193	0.08	6	235	428	4X10	C
16	LAUN	1.54	30	2.07	63	0.17	58	180	226	0.07	5	153	321	4X10	A
17	LAUN	1.54	30	2.07	63	0.17	56	170	226	0.08	5	220	463	3X10	A
18	W/R	1.36	26	0.52	16	0.17	27	120	147	0.12	4	298	184	3X10	B
19	FOY	4.80	93	0.79	24	0.16	48	120	168	0.1	6	474	122	4X10	A
20	MUD	2.73	53	0.45	14	0.17	18	160	178	0.09	5	389	103	3X10	B
21	BAS	4.67	90	0.47	14	0.16	22	150	172	0.09	6	459	71	4X10	C
22	BAS	4.67	90	0.47	14	0.16	26	160	186	0.09	6	459	71	4X10	C
23	BAS	4.67	90	0.47	14	0.16	24	100	124	0.13	6	459	71	4X10	B
24	BAS	4.67	90	0.47	14	0.16	45	110	155	0.1	6	459	71	4X10	A

SUPPLY AIR TRUNK SIZE												RETURN 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	351	0.07	9.8	12	x	8	527	TRUNK G	0	0.00	0	0	x	8	0		
TRUNK B	606	0.07	12	16	x	8	682	TRUNK H	0	0.00	0	0	x	8	0		
TRUNK C	493	0.08	10.8	14	x	8	634	TRUNK I	0	0.00	0	0	x	8	0		
TRUNK D	0	0.00	0	0	x	8	0	TRUNK J	0	0.00	0	0	x	8	0		
TRUNK E	0	0.00	0	0	x	8	0	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		
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		

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	130	115	115	310	130	0	0	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	55	46	63	63	36	30	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	165	165	265	265	215	205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	220	211	328	328	251	235	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.07	0.07	0.05	0.05	0.06	0.06	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	14.80	14.80
ROUND DUCT SIZE	6.8	6.8	7	7	9.7	7	0	0	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	0	0	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	30	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: 4008
SITE NAME: PINE VALLEY & TESTON

LO # 85233
THE HILLSDALE

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>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Table 9.32.3.A. TOTAL		<u>169.6</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>79.5</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>169.6</u>	cfm
Less Principal Ventil. Capacity	<u>79.5</u>	cfm
Required Supplemental Capacity	<u>90.1</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY			
Model: VANEE 65H	Location: BSMT		
<u>79.5</u> cfm	<u>3.0</u> sones ☒ HVI Approved		
PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
79.5 CFM	X 76 F	X 1.08	X 0.25

SUPPLEMENTAL FANS		PANASONIC		
Location	Model	cfm	HVI	Sones
ENS	FV-05-11VK1	50	☒	0.3
ENS-2	FV-05-11VK1	50	☒	0.3
ENS-2/3	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 @ 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:	February-20

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 85233	Model: 4008	Builder: GOLD PARK HOMES	Date: 02/26/2020																																																									
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>1195</td> <td>10</td> <td>11950</td> </tr> <tr> <td>First</td> <td>1195</td> <td>11</td> <td>13145</td> </tr> <tr> <td>Second</td> <td>1539</td> <td>9</td> <td>13851</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>38,946.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>1102.8 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1195	10	11950	First	1195	11	13145	Second	1539	9	13851	Third	0	9	0	Fourth	0	9	0	Total:			38,946.0 ft³	Total:			1102.8 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 30%; text-align: center;">0.370</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.124</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 style="text-align: center;">22</td> <td style="text-align: center;">-20</td> <td style="text-align: center;">42</td> <td style="text-align: center;">76</td> </tr> <tr> <td>Summer DTDc</td> <td style="text-align: center;">24</td> <td style="text-align: center;">31</td> <td style="text-align: center;">7</td> <td style="text-align: center;">13</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.370	SUMMER NATURAL AIR CHANGE RATE	0.124	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																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.370 x 306.34 x 42 °C x 1.2 = 5737 W = 19573 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.124 x 306.34 x 7 °C x 1.2 = 325 W = 1108 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 76 °F x 1.08 x 0.25 = 1631 Btu/h			$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 13 °F x 1.08 x 0.25 = 275 Btu/h																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																												
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{level})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																								
1	0.5	19,573	8,909	1.098																																																								
2	0.3		13,725	0.428																																																								
3	0.2		14,197	0.276																																																								
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: 4008	THE HILLSDALE	BUILDER: GOLD PARK HOMES
SFQT: 2716	LO# 85233	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):	38946.0	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: 55.0 ft	WIDTH: 33.0 ft	EXPOSED PERIMETER:	176.0 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	-

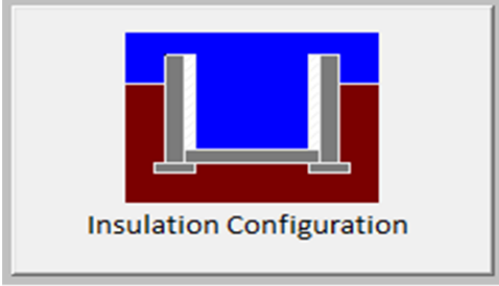
INDIVIDUAL BCIN: 19669

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):	16.8	 Insulation Configuration
Floor Width (m):	10.1	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	2.2	
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):		1723

TYPE: 4008
LO# 85233

THE HILLSDALE

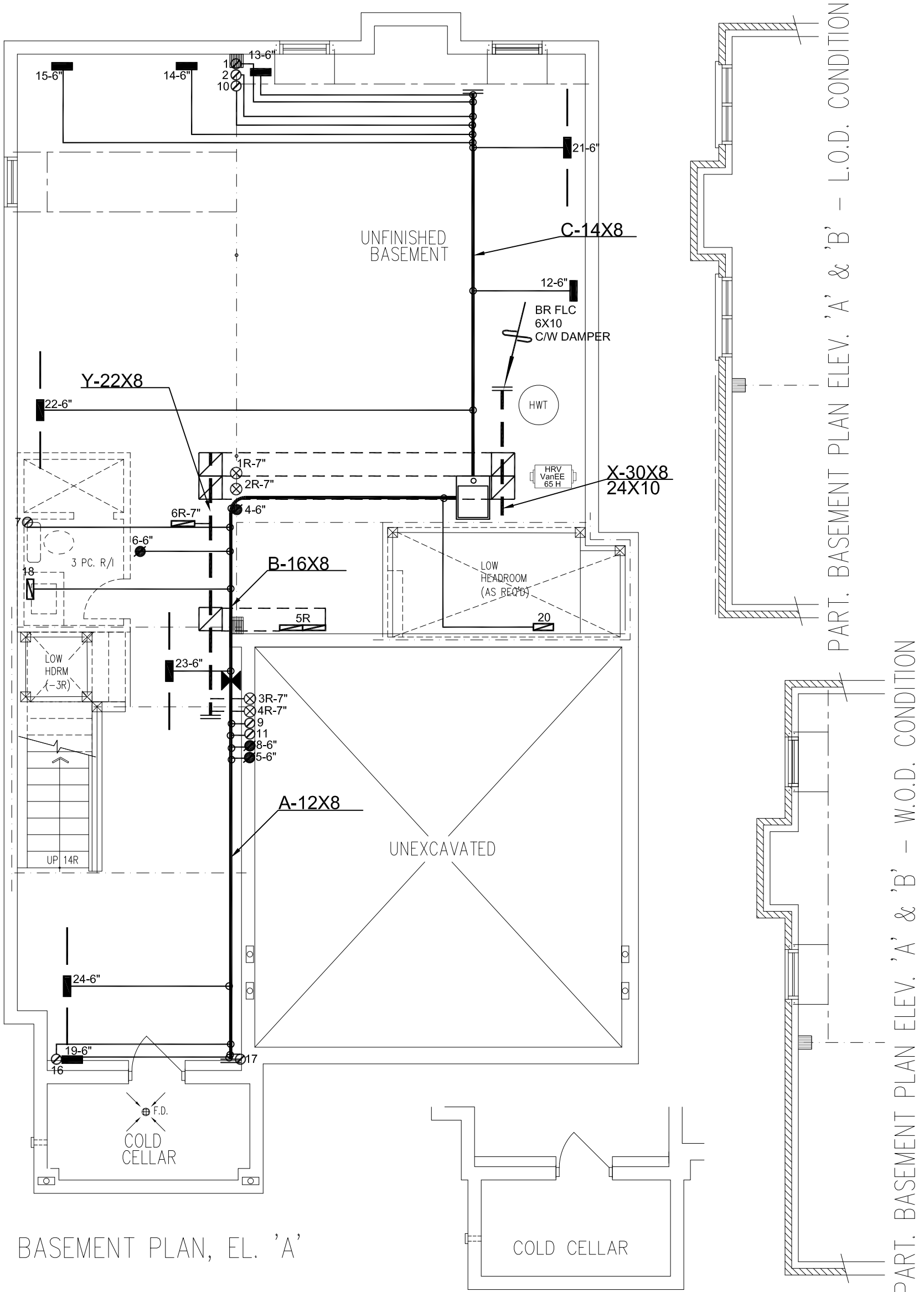
Air Infiltration Residential Load Calculator

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):	7.92			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1102.8			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1470.1 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	37.5	37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.370			
Cooling Air Leakage Rate (ACH/H):	0.124			

TYPE: 4008
LO# 85233

THE HILLSDALE



BASEMENT PLAN, EL. 'A'

PARTIAL BASEMENT PLAN, EL. 'B'

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.

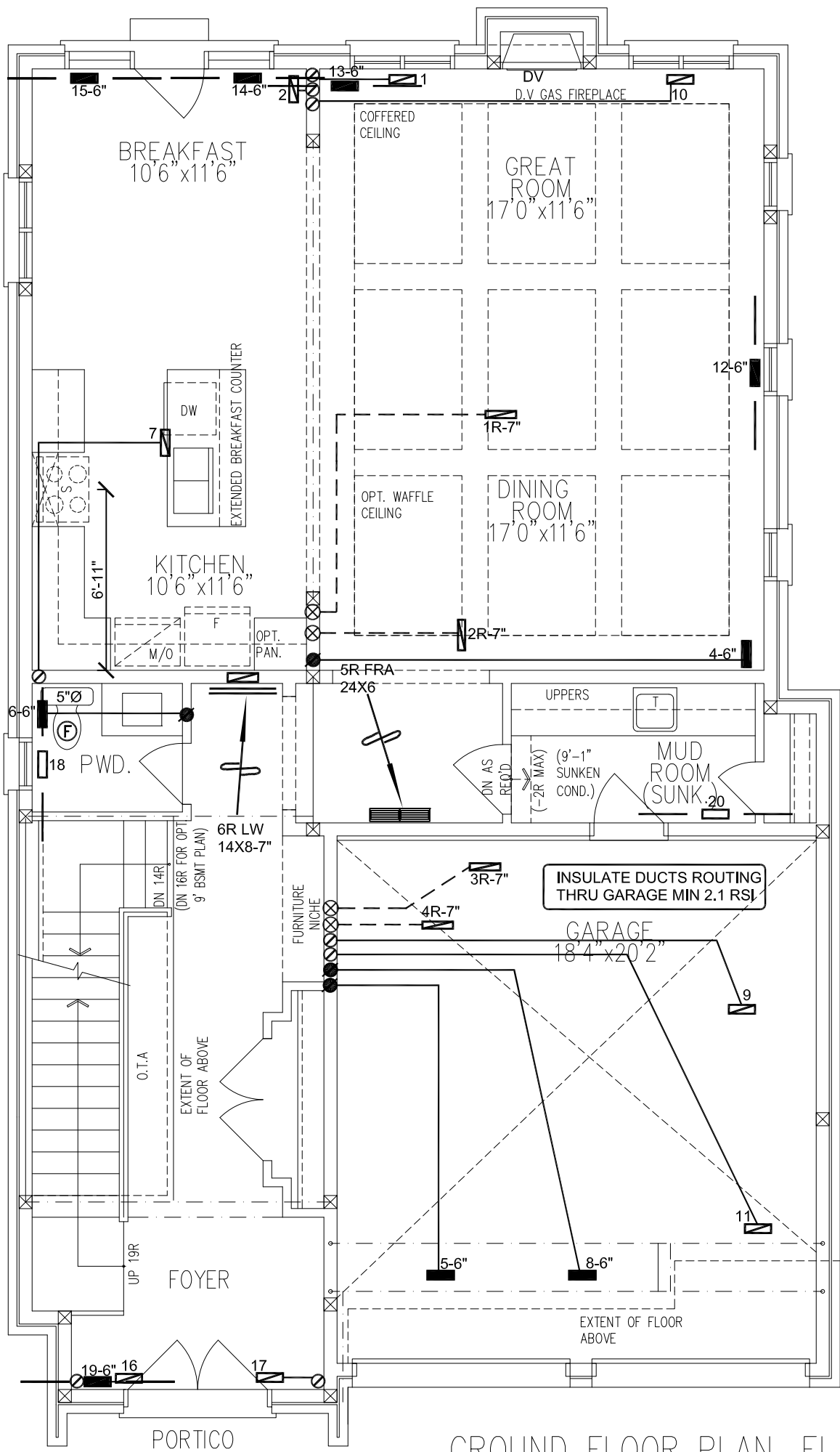
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

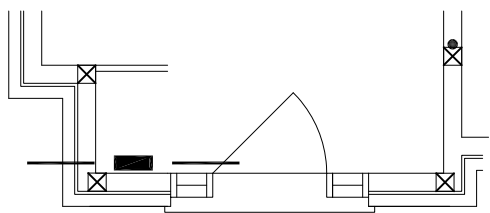
HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED AS PER ARCHITECTURALS
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description
	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 58700 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 EL296UH070XE36B		2ND FLOOR	12	4	3	
			INPUT 66 MBTU/H		1ST FLOOR	7	2	2	Date FEB/2020
			OUTPUT 64 MBTU/H		BASEMENT	4	1	0	Scale 3/16" = 1'-0"
		COOLING 3.0 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					BCIN# 19669
THE HILLSDALE 4008		FAN SPEED 1100 cfm @ 0.6" w.c.							LO# 85233
2716 sqft									



GROUND FLOOR PLAN, EL. 'A'



PARTIAL GROUND FLOOR PLAN, EL. 'B'

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.

CSA-F280-12
PACKAGE A1

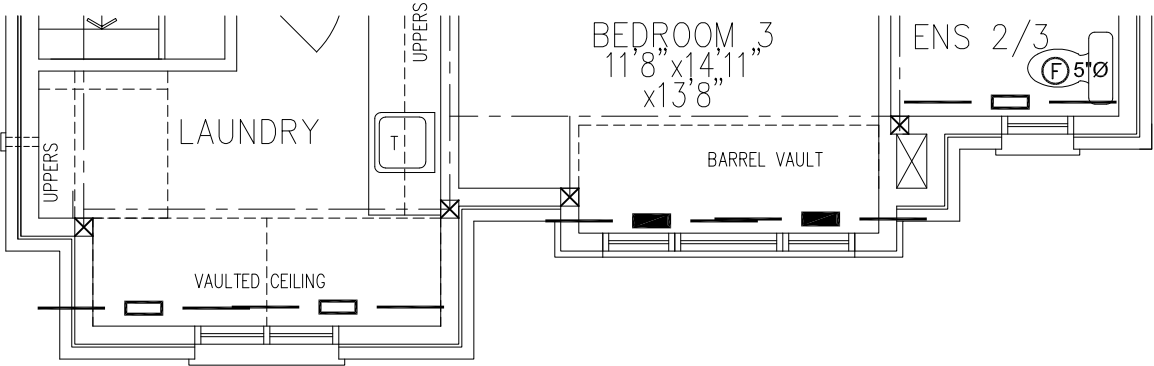
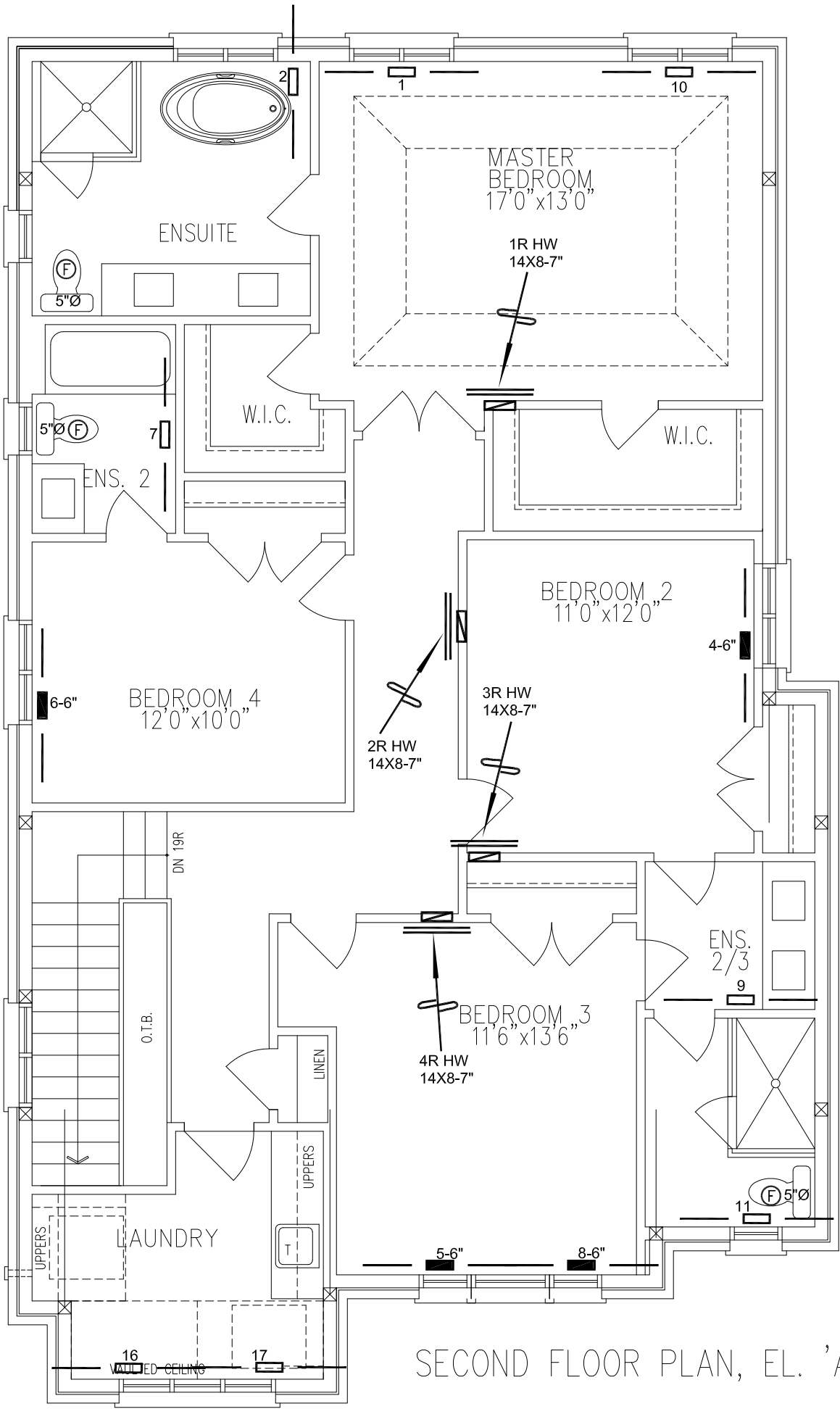
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED AS PER ARCHITECTURALS	FEB/2020
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
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Client	GOLD PARK HOMES
Project Name	PINE VALLEY & TESTON VAUGHAN, ONTARIO
	THE HILLSDALE 4008 2716 sqft

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

Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title	FIRST FLOOR HEATING LAYOUT
Date	FEB/2020
Scale	3/16" = 1'-0"
	BCIN# 19669
LO#	85233



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.

PARTIAL
SECOND FLOOR PLAN, EL. 'B'

CSA-F280-12
PACKAGE A1

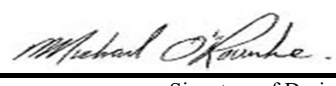
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
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GOLD PARK HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	FEB/2020
PINE VALLEY & TESTON VAUGHAN, ONTARIO			Scale	3/16" = 1'-0"
THE HILLSDALE 4008		BCIN# 19669		
2716 sqft		LO#	85233	

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: 4008 'THE HILLSDALE 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.			
February 26, 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					WOB					DATE: Feb-20					WINTER NATURAL AIR CHANGE RATE 0.407					HEAT LOSS ΔT °F. 76					CSA-F280-12				
BUILDER: GOLD PARK HOMES					TYPE: 4008 'THE HILLSDALE					LO# 85234					SUMMER NATURAL AIR CHANGE RATE 0.137					HEAT GAIN ΔT °F. 13					SB-12 PACKAGE A1				
ROOM USE					MBR					BED-2					BED-3					BED-4					ENS-2				
EXP. WALL					39					15					15					21					9				
CLG. HT.					10					9					9					9					9				
FACTORS																													
GRS.WALL AREA					390					135					135					189					81				
GLAZING					LOSS GAIN					LOSS GAIN					LOSS GAIN					LOSS GAIN					LOSS GAIN				
NORTH					21.3 16.0 0 0 0					18 383 288 0 0 0					0 0 0 0 0 0					0 0 0 0 0 0					0 0 0 0 0 0				
EAST					21.3 41.6 0 0 0					0 0 0 60 1277 2493					0 0 0 0 0 0					0 0 0 0 0 0					11 234 457				
SOUTH					21.3 24.9 0 0 0					0 0 0 0 0 0					0 0 0 28 596 697					8 170 199					0 0 0 0				
WEST					21.3 41.6 36 766 1496					0 0 0 0 0 0					0 0 0 0 0 0					0 0 0 0					0 0 0 0				
SKYL.T.					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				
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				
NET EXPOSED WALL					4.5 0.8 354 1580 266					117 522 88 75 335 56					161 718 121 73 326 55					187 835 141									
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									
EXPOSED CLG					1.3 0.6 408 524 240					183 235 108 227 291 133					244 313 143 63 81 37					105 135 62									
NO ATTIC EXPOSED CLG					2.7 1.3 0 0 0					0 0 0 36 99 45					0 0 0 0 0 0					0 0 0 0									
EXPOSED FLOOR					2.6 0.4 0 0 0					21 54 9 212 541 91					0 0 0 0 0 0					105 268 45									
BASEMENT/CRAWL HEAT LOSS					0					0					0					0									
SLAB ON GRADE HEAT LOSS					0					0					0					0									
SUBTOTAL HT LOSS					2869					1194					2542					1627					577				
SUB TOTAL HT GAIN					2002					492					2819					962					291				
LEVEL FACTOR / MULTIPLIER					0.20 0.30					0.20 0.30					0.20 0.30					0.20 0.30					0.20 0.30				
AIR CHANGE HEAT LOSS					871					362					772					494					175				
AIR CHANGE HEAT GAIN					148					36					209					71					22				
DUCT LOSS					0					156					331					0					192				
DUCT GAIN					0					148					398					0					76				
HEAT GAIN PEOPLE					240					1					1					240					0				
HEAT GAIN APPLIANCES/LIGHTS					713					713					713					713					0				
TOTAL HT LOSS BTU/H					3741					1711					3646					2121					752				
TOTAL HT GAIN x 1.3 BTU/H					4346					2118					5693					2581					406				

ROOM USE					GT/DN					KIT					LAUN					W/R					FOY				
EXP. WALL					55					36					30					16					49				
CLG. HT.					11					11					9					11					11				
FACTORS																													
GRS.WALL AREA					605					396					270					176					539				
GLAZING					LOSS GAIN					LOSS GAIN					LOSS GAIN					LOSS GAIN					LOSS GAIN				
NORTH																													

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

WOB
TYPE: 4008 THE HILLSDALE

DATE: Feb-20

GFA: 2716 LO# 85234

HEATING CFM 1100 COOLING CFM 1100
TOTAL HEAT LOSS 58,457 TOTAL HEAT GAIN 36,985
AIR FLOW RATE CFM 18.82 AIR FLOW RATE CFM 29.74

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

EL296UH070XE36B
^LENNOX
70

AFUE = 96 %
INPUT (BTU/H) = 66,000
OUTPUT (BTU/H) = **64,000**

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	12	7	4
R/A	0	0	4	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

FAN SPEED
LOW 0
MEDLOW 0
MEDIUM 995
MEDIUM HIGH 1100
HIGH 0

DESIGN CFM = **1100**
CFM @ .6" E.S.P.

TEMPERATURE RISE **54** °F

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

RUN #	1	2	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	BED-2	BED-3	BED-4	ENS-2	BED-3	ENS-2/3	MBR	ENS-2/3	GT/DN	GT/DN	KIT	KIT	LAUN	LAUN	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.87	1.95	1.71	1.82	2.12	0.75	1.82	1.05	1.87	1.05	3.04	3.04	2.51	2.51	1.58	1.58	1.40	4.94	2.81	4.76	4.76	4.76	4.76
CFM PER RUN HEAT	35	37	32	34	40	14	34	20	35	20	57	57	47	47	30	30	26	93	53	90	90	90	90
RM GAIN MBH	2.17	1.51	2.12	2.85	2.58	0.41	2.85	0.54	2.17	0.54	2.54	2.54	2.36	2.36	2.08	2.08	0.52	0.79	0.45	0.88	0.88	0.88	0.88
CFM PER RUN COOLING	65	45	63	85	77	12	85	16	65	16	76	76	70	70	62	62	16	24	13	26	26	26	26
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	46	43	41	51	36	48	55	52	57	58	26	32	36	43	58	56	27	48	18	32	46	24	45
EQUIVALENT LENGTH	160	150	170	160	150	170	170	190	160	180	100	90	140	150	180	170	120	120	160	150	160	100	110
TOTAL EFFECTIVE LENGTH	206	193	211	211	186	218	225	242	217	238	126	122	176	193	238	226	147	168	178	182	206	124	155
ADJUSTED PRESSURE	0.08	0.09	0.08	0.08	0.09	0.08	0.07	0.07	0.08	0.07	0.14	0.14	0.1	0.09	0.07	0.08	0.12	0.1	0.1	0.09	0.08	0.13	0.1
ROUND DUCT SIZE	5	4	6	6	6	4	6	4	5	4	5	5	5	5	6	5	4	6	5	6	6	6	6
HEATING VELOCITY (ft/min)	257	424	163	173	204	161	173	229	257	229	419	419	345	345	153	220	298	474	389	459	459	459	459
COOLING VELOCITY (ft/min)	477	516	321	433	393	138	433	184	477	184	558	558	514	514	316	455	184	122	95	133	133	133	133
OUTLET GRILL SIZE	3X10	3X10	4X10	4X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	C	B	A	B	B	A	A	C	A	C	C	C	C	A	A	B	A	B	C	C	B	A

RUN #	ROOM NAME	RM LOSS MBH	CFM PER RUN HEAT	RM GAIN MBH	CFM PER RUN COOLING	ADJUSTED PRESSURE	ACTUAL DUCT LGH	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	ROUND DUCT SIZE	HEATING VELOCITY (ft/min)	COOLING VELOCITY (ft/min)	OUTLET GRILL SIZE	TRUNK
1	MBR	1.87	35	2.17	65	0.17	46	160	206	0.08	5	257	477	3X10	C
2	ENS	1.95	37	1.51	45	0.17	43	150	193	0.09	4	424	516	3X10	C
4	BED-2	1.71	32	2.12	63	0.17	41	170	211	0.08	6	163	321	4X10	B
5	BED-3	1.82	34	2.85	85	0.16	51	160	211	0.08	6	173	433	4X10	A
6	BED-4	2.12	40	2.58	77	0.17	36	150	186	0.09	6	204	393	4X10	B
7	ENS-2	0.75	14	0.41	12	0.17	48	170	218	0.08	4	161	138	3X10	B
8	BED-3	1.82	34	2.85	85	0.16	55	170	433	0.07	6	173	433	4X10	A
9	ENS-2/3	1.05	20	0.54	16	0.17	52	190	242	0.07	4	229	184	3X10	A
10	MBR	1.87	35	2.17	65	0.17	57	160	217	0.08	5	257	477	3X10	C
11	ENS-2/3	1.05	20	0.54	16	0.17	58	180	238	0.07	4	229	184	3X10	A
12	GT/DN	3.04	57	2.54	76	0.17	26	100	126	0.14	5	419	558	3X10	C
13	GT/DN	3.04	57	2.54	76	0.17	32	90	122	0.14	5	419	558	3X10	C
14	KIT	2.51	47	2.36	70	0.17	36	140	176	0.1	5	345	514	3X10	C
15	KIT	2.51	47	2.36	70	0.17	43	150	193	0.09	5	345	514	3X10	C
16	LAUN	1.58	30	2.08	62	0.17	58	180	238	0.07	6	153	316	4X10	A
17	LAUN	1.58	30	2.08	62	0.17	56	170	226	0.08	5	220	455	3X10	A
18	W/R	1.40	26	0.52	16	0.17	27	120	147	0.12	4	298	184	3X10	B
19	FOY	4.94	93	0.79	24	0.16	48	120	168	0.1	6	474	122	4X10	A
20	MUD	2.81	53	0.45	13	0.17	18	160	178	0.1	5	389	95	3X10	B
21	BAS	4.76	90	0.88	26	0.16	32	150	182	0.09	6	459	133	4X10	C
22	BAS	4.76	90	0.88	26	0.16	46	160	206	0.08	6	459	133	4X10	C
23	BAS	4.76	90	0.88	26	0.16	24	100	124	0.13	6	459	133	4X10	B
24	BAS	4.76	90	0.88	26	0.16	45	110	155	0.1	6	459	133	4X10	A

SUPPLY AIR TRUNK SIZE										RETURN 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 CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)	
TRUNK A	351	0.07	9.8	12	x	8	527	TRUNK G	0	0.00	0	0	x	8	0	0	0	0	TRUNK O	0	0.05	0	0	x	8	0
TRUNK B	606	0.07	12	16	x	8	682	TRUNK H	0	0.00	0	0	x	8	0	0	0	0	TRUNK P	0	0.05	0	0	x	8	0
TRUNK C	495	0.08	10.8	14	x	8	636	TRUNK I	0	0.00	0	0	x	8	0	0	0	0	TRUNK Q	0	0.05	0	0	x	8	0
TRUNK D	0	0.00	0	0	x	8	0	TRUNK J	0	0.00	0	0	x	8	0	0	0	0	TRUNK R	0	0.05	0	0	x	8	0
TRUNK E	0	0.00	0	0	x	8	0	TRUNK K	0	0.00	0	0	x	8	0	0	0	0	TRUNK S	0	0.05	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	0	0	0	TRUNK T	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	130	115	115	310	130	0	0	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	55	46	63	63	36	30	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	165	165	265	265	215	205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	220	211	328	328	251	235	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.07	0.07	0.05	0.05	0.06	0.06	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	14.80	14.80
ROUND DUCT SIZE	6.8	6.8	7	7	9.7	7	0	0	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	0	0	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	30	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: 4008 THE HILLSDALE
SITE NAME: PINE VALLEY & TESTON

LO # 85234
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>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Table 9.32.3.A.	TOTAL	<u>169.6</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>79.5</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>169.6</u>	cfm
Less Principal Ventil. Capacity	<u>79.5</u>	cfm
Required Supplemental Capacity	<u>90.1</u>	cfm

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

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

SUPPLEMENTAL FANS		PANASONIC		
Location	Model	cfm	HVI	Sones
ENS	FV-05-11VK1	50	☒	0.3
ENS-2	FV-05-11VK1	50	☒	0.3
ENS-2/3	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 @ 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:	February-20

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 85234	Model: 4008 'THE HILLSDALE	Builder: GOLD PARK HOMES	Date: 02/26/2020																																																									
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>1195</td> <td>10</td> <td>11950</td> </tr> <tr> <td>First</td> <td>1195</td> <td>11</td> <td>13145</td> </tr> <tr> <td>Second</td> <td>1539</td> <td>9</td> <td>13851</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="3" style="text-align: right;">Total:</td> <td>38,946.0 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>1102.8 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1195	10	11950	First	1195	11	13145	Second	1539	9	13851	Third	0	9	0	Fourth	0	9	0	Total:			38,946.0 ft³	Total:			1102.8 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%; text-align: center;">0.407</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.137</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <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> </thead> <tbody> <tr> <td>Winter DTDh</td> <td style="text-align: center;">22</td> <td style="text-align: center;">-20</td> <td style="text-align: center;">42</td> <td style="text-align: center;">76</td> </tr> <tr> <td>Summer DTDc</td> <td style="text-align: center;">24</td> <td style="text-align: center;">31</td> <td style="text-align: center;">7</td> <td style="text-align: center;">13</td> </tr> </tbody> </table>		WINTER NATURAL AIR CHANGE RATE	0.407	SUMMER NATURAL AIR CHANGE RATE	0.137	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-20	42	76	Summer DTDc	24	31	7	13
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																									
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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 306.34 x 42 °C x 1.2 = 6315 W = 21548 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.137 x 306.34 x 7 °C x 1.2 = 357 W = 1218 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 76 °F x 1.08 x 0.25 = 1631 Btu/h			$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 13 °F x 1.08 x 0.25 = 275 Btu/h																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																												
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{level})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																								
1	0.5	21,548	8,250	1.306																																																								
2	0.3		13,784	0.469																																																								
3	0.2		14,197	0.304																																																								
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: 4008 'THE HILLSDALE	WOB	BUILDER: GOLD PARK HOMES
SFQT: 2716	LO# 85234	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):	38946.0	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: 55.0 ft	WIDTH: 33.0 ft	EXPOSED PERIMETER:	133.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	43.0 ft

2012 OBC - COMPLIANCE PACKAGE

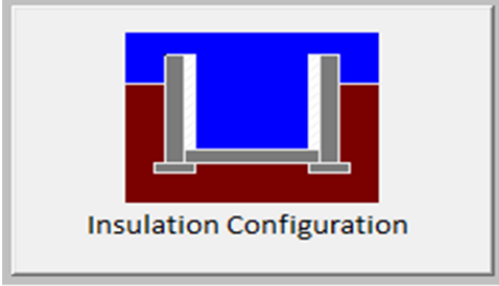
Component	Compliance Package A1	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20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

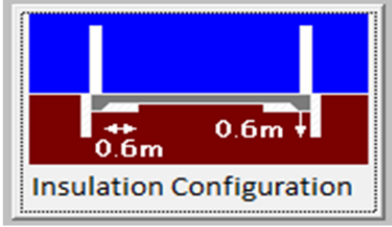
Weather Station Description		
Province:	Ontario	
Region:	Vaughan (Woodbridge)	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	4.6	 Insulation Configuration
Floor Width (m):	10.1	
Exposed Perimeter (m):	40.5	
Wall Height (m):	3.0	
Depth Below Grade (m):	1.79	
Window Area (m ²):	0.4	
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):		715

TYPE: 4008 'THE HILLSDALE
LO# 85234

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):	10.1	
Exposed Perimeter (m):	13.1	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		162

TYPE: 4008 'THE HILLSDALE
LO# 85234

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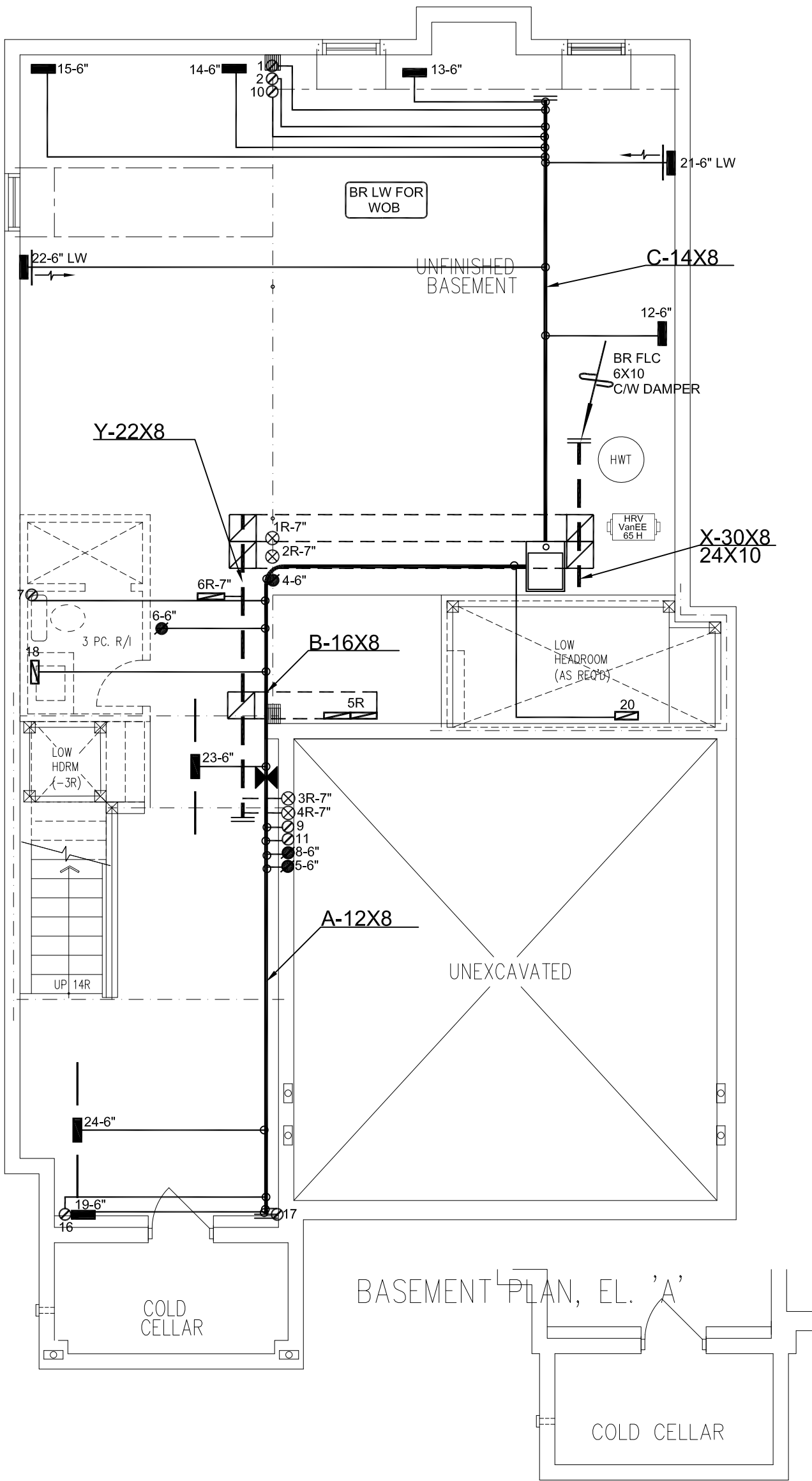
Air Infiltration Residential Load Calculator

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):	1102.8			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1470.1 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	37.5	37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.407			
Cooling Air Leakage Rate (ACH/H):	0.137			

TYPE: 4008 'THE HILLSDALE
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WOB



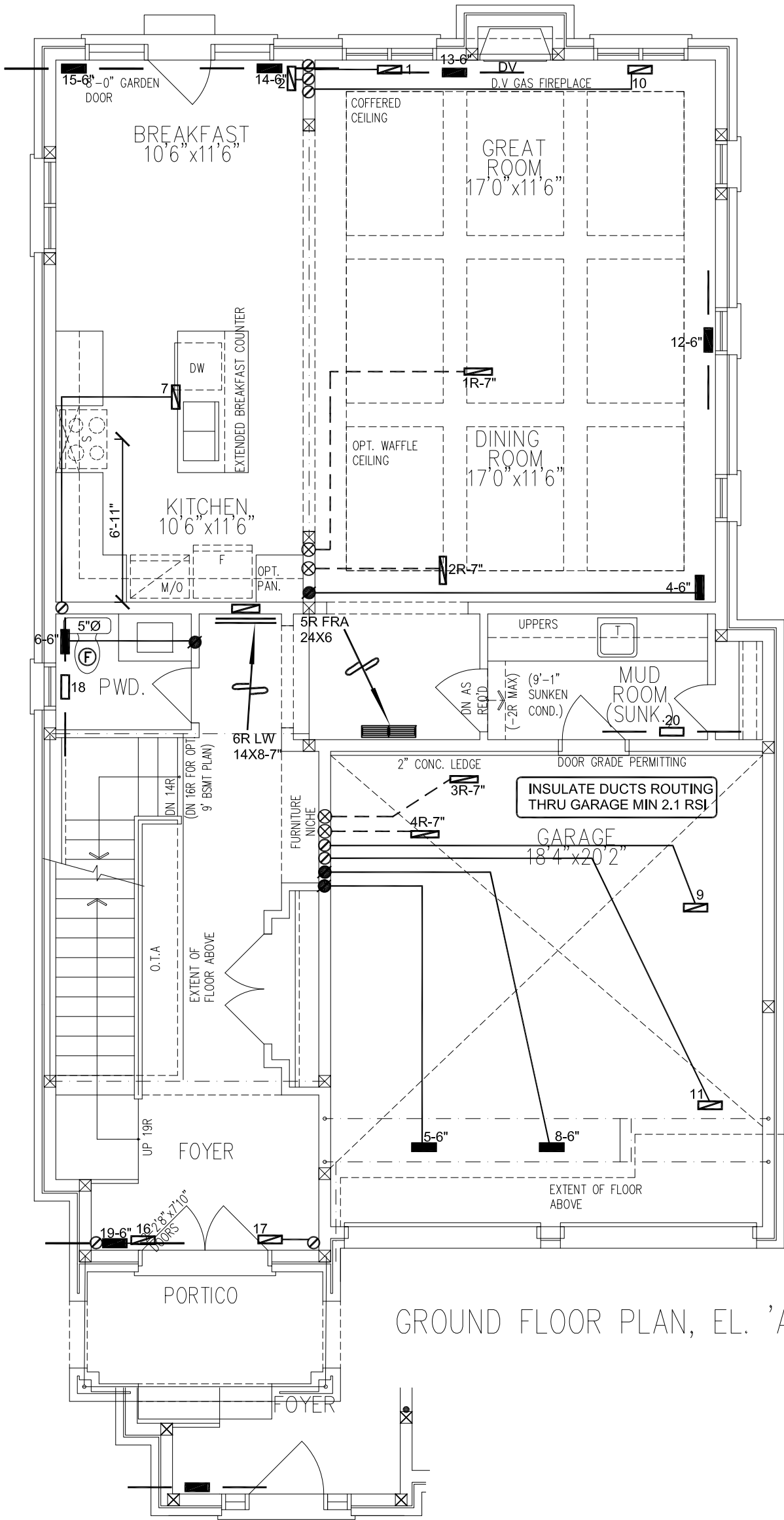
WOB
CSA-F280-12
PACKAGE A1

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								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.	REVISED AS PER ARCHITECTURALS	FEB/2020
	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		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 60088 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		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.		MODEL EL296UH070XE36B		2ND FLOOR			Date	
PINE VALLEY & TESTON VAUGHAN, ONTARIO				INPUT 66 MBTU/H		1ST FLOOR			FEB/2020	
THE HILLSDALE WOB 4008				OUTPUT 64 MBTU/H		BASEMENT			Scale	
2716 sqft				COOLING 3.0 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			3/16" = 1'-0"	
				FAN SPEED 1100 cfm @ 0.6" w.c.					BCIN# 19669	
							LO# 85234			



GROUND FLOOR PLAN, EL. 'A'

PARTIAL
GROUND FLOOR PLAN, EL. 'B'

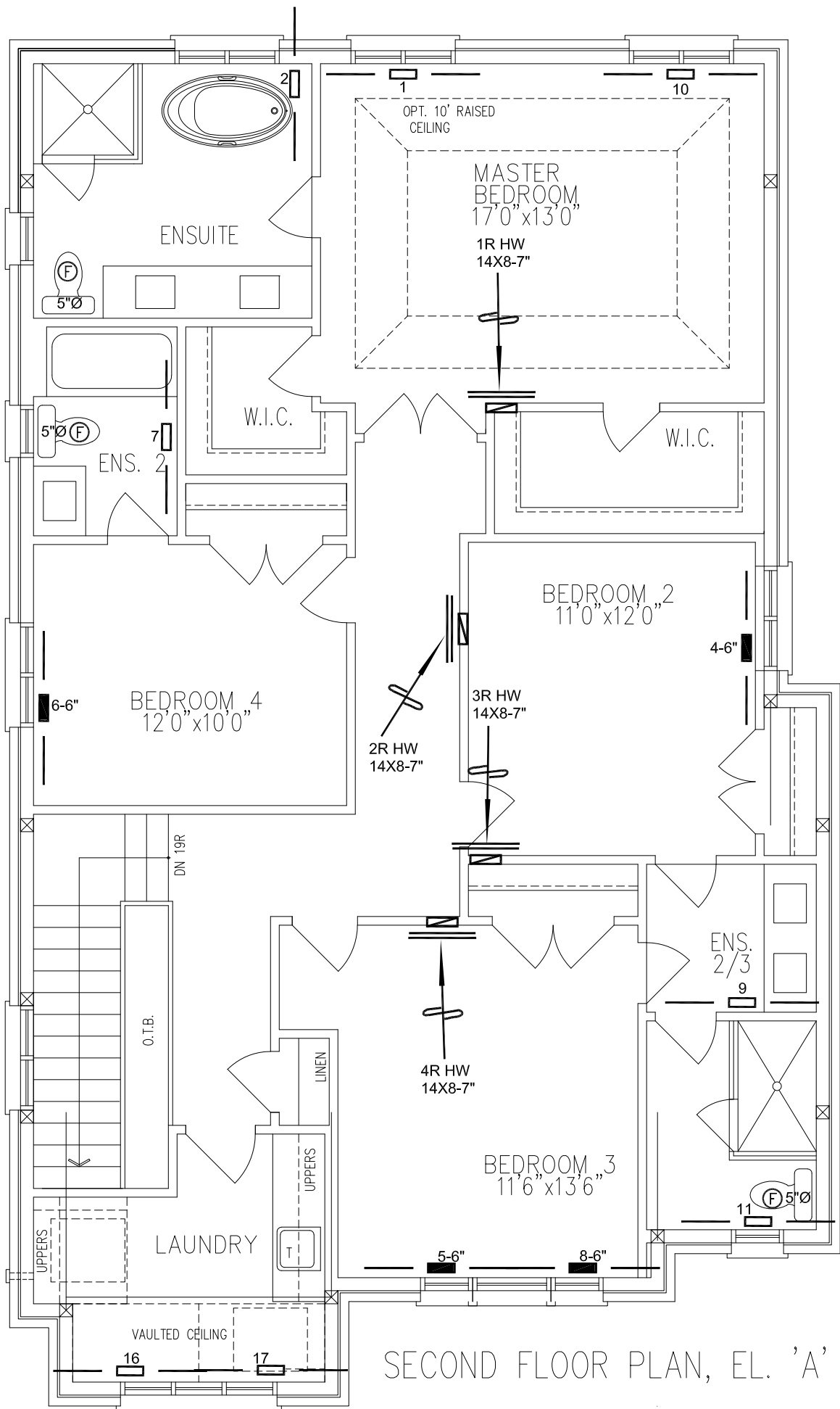
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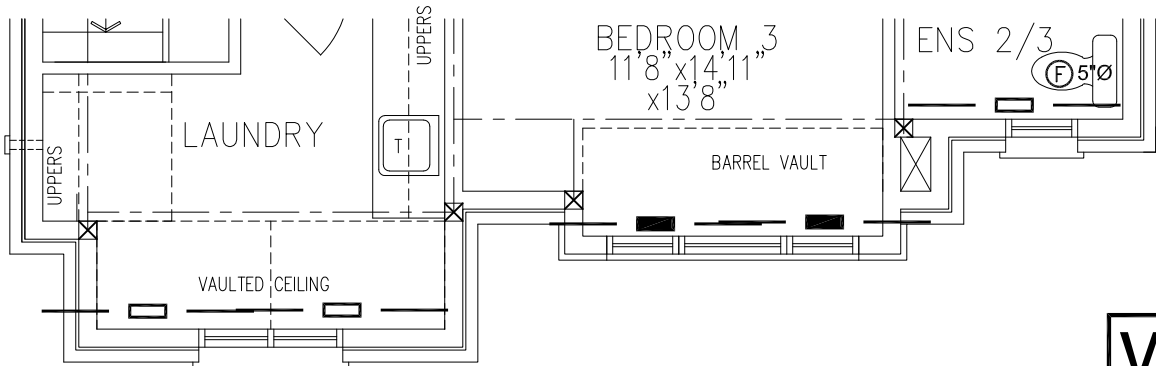
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Client		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.	Sheet Title	
GOLD PARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	FEB/2020
PINE VALLEY & TESTON VAUGHAN, ONTARIO			Scale	3/16" = 1'-0"
THE HILLSDALE WOB 4008			BCIN# 19669	
2716 sqft			LO#	85234



SECOND FLOOR PLAN, EL. 'A'



PARTIAL
SECOND FLOOR PLAN, EL. 'B'

WOB
CSA-F280-12
PACKAGE A1

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Client
GOLD PARK HOMES

Project Name
**PINE VALLEY & TESTON
VAUGHAN, ONTARIO**

**THE HILLSDALE
WOB
4008**

2716 sqft

375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdsgns.ca
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Specializing in Residential Mechanical Design Services

Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
**SECOND FLOOR
HEATING
LAYOUT**

Date
FEB/2020

Scale
3/16" = 1'-0"

BCIN# 19669

LO# 85234