

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: 5003 - THE OAKGROVE 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.				
October 5, 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

TOTAL HEAT GAIN BTU/H: 59632
TONS: 4.97
LOSS DUE TO VENTILATION LOAD BTU/H: 3181
STRUCTURAL HEAT LOSS: 72640
TOTAL COMBINED HEAT LOSS BTU/H: 76720

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Michael J. Lander.

INDIVIDUAL BCIN: 19669

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

TYPE: 5003 - THE OAK GROVE

DATE: Oct-18

GFA: 3862 LO# 77475

HEATING CFM 1955 COOLING CFM 1955
TOTAL HEAT LOSS 72,540
AIR FLOW RATE CFM 26.95AFUE = 96 %
INPUT (BTU/H) = 110,000
OUTPUT (BTU/H) = 106,000
DESIGN CFM = 1955
CFM @ 6" E.S.P.

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	10	7
R/A	0	0	5	3	1

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

All S/A runs 5/8" 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	WIC	BED-2	BED-3	BED-4	BATH	STUDY	LAUN	MBR	ENS-2	DIN	LIV	KT/GT	KT/GT	KT/GT	KT/GT	KT/GT	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.77	0.74	0.90	2.05	1.75	1.62	1.61	2.23	0.85	1.77	0.85	1.76	1.90	2.58	2.58	2.58	2.58	2.58	3.97	3.20	3.31	3.31	3.31	3.31
CFM PER RUN HEAT	48	20	24	55	47	44	43	60	23	48	23	47	51	69	69	69	69	69	107	86	89	89	89	89
RM GAIN MBH	2.21	0.56	0.29	2.38	2.50	2.36	2.77	3.09	1.44	2.21	0.44	2.14	2.43	3.11	3.11	3.11	3.11	3.11	0.81	1.81	0.49	0.49	0.49	0.49
CFM PER RUN COOLING	73	19	10	79	83	78	92	102	48	73	15	71	81	103	103	103	103	103	27	60	16	16	16	16
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.16	0.16
EQUIVALENT LENGTH	48	26	36	48	45	54	42	63	45	41	49	26	39	36	27	31	38	45	35	40	30	22	42	41
TOTAL EFFECTIVE LENGTH	185	205	120	165	140	195	150	150	130	185	170	90	110	110	170	170	160	110	120	150	110	150	130	120
ADJUSTED PRESSURE	0.07	0.07	0.11	0.08	0.09	0.07	0.08	0.08	0.11	0.08	0.08	0.15	0.11	0.11	0.12	0.08	0.08	0.1	0.1	0.09	0.12	0.09	0.09	0.1
ROUND DUCT SIZE	5	4	4	5	6	6	6	6	6	5	4	4	5	6	6	6	6	6	6	5	5	6	6	5
HEATING VELOCITY (ft/min)	352	229	275	404	240	224	219	306	264	352	264	539	374	352	352	352	352	352	546	631	653	454	454	653
COOLING VELOCITY (ft/min)	536	218	115	580	423	398	469	520	551	536	172	815	595	525	525	525	525	525	138	441	117	82	82	117
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10
TRUNK	A	E	C	E	E	D	D	B	B	A	B	E	D	A	A	B	B	B	D	B	A	A	B	B

RUN #	25	26	27	28	29	30	31	32	33
ROOM NAME	BAS	BAS	BAS	MBR	BED-3	BED-3	BED-4	LIV	ENS
RM LOSS MBH	3.31	3.31	3.31	1.77	1.75	1.75	1.62	1.90	0.74
CFM PER RUN HEAT	89	89	89	48	47	47	44	51	20
RM GAIN MBH	0.49	0.49	0.49	2.21	2.50	2.50	2.36	2.43	0.56
CFM PER RUN COOLING	16	16	16	73	83	83	78	81	19
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.17	0.16	0.17
EQUIVALENT LENGTH	21	23	36	38	52	56	43	34	37
TOTAL EFFECTIVE LENGTH	180	100	130	160	145	155	190	100	195
ADJUSTED PRESSURE	0.08	0.13	0.1	0.09	0.08	0.08	0.07	0.12	0.07
ROUND DUCT SIZE	6	5	5	5	6	6	6	5	4
HEATING VELOCITY (ft/min)	454	653	653	352	240	240	224	374	229
COOLING VELOCITY (ft/min)	82	117	117	536	423	423	398	595	218
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10
TRUNK	E	E	D	A	E	E	D	D	E

SUPPLY AIR TRUNK SIZE										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	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)			
TRUNK A	460	0.07	10.8	8	X	8	591	0	0	0	X	8	0.06	0	0	X	8		
TRUNK B	577	0.08	11.4	8	X	8	649	0	0	0	X	8	0.06	0	0	X	8		
TRUNK C	1061	0.07	14.8	8	X	8	735	0	0	0	X	8	0.06	0	0	X	8		
TRUNK D	429	0.07	10.6	8	X	8	552	0	0	0	X	8	0.06	0	0	X	8		
TRUNK E	890	0.07	13.9	8	X	8	728	0	0	0	X	8	0.06	0	0	X	8		
TRUNK F	0	0.00	0	0	X	8	0	0.00	0	0	X	8	0.06	0	0	X	8		
						</													

Michael O'Rourke

TYPE: 5003 - THE OAKGROVE
SITE NAME: PINE VALLEY & TESTON

LO # 77475

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	7 @ 10.6 cfm	74.2 cfm
Table 9.32.3.A.	TOTAL	201.4 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	201.4	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	46.4	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
BATH	QTXEN050C	50	☒	0.3
ENS-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:	October-18

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																									
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																									
LO#: 77475		Model: 5003 - THE OAKGROVE		Builder: GOLD PARK HOMES		Date: 10/5/2018																																																			
Volume Calculation				Air Change & Delta T Data																																																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>House Volume Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr> <td>Bsmt</td> <td>1760</td> <td>10</td> <td>17600</td> </tr> <tr> <td>First</td> <td>1760</td> <td>11</td> <td>19360</td> </tr> <tr> <td>Second</td> <td>2125</td> <td>9</td> <td>19125</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">Total:</td> <td></td> <td>56,085.0 ft³</td> </tr> <tr> <td colspan="2">Total:</td> <td></td> <td>1588.2 m³</td> </tr> </tbody> </table>				House Volume Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1760	10	17600	First	1760	11	19360	Second	2125	9	19125	Third	0	9	0	Fourth	0	9	0	Total:			56,085.0 ft³	Total:			1588.2 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <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> </thead> <tbody> <tr> <td>Winter DTDh</td> <td>22</td> <td>-20</td> <td>42</td> </tr> <tr> <td>Summer DTDc</td> <td>22</td> <td>31</td> <td>9</td> </tr> </tbody> </table>						Design Temperature Difference					Tin °C	Tout °C	ΔT °C	Winter DTDh	22	-20	42	Summer DTDc	22	31	9
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5.2.3.1 Heat Loss due to Air Leakage				6.2.6 Sensible Gain due to Air Leakage																																																					
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$				$HG_{satb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$																																																					
0.340 x 441.15 x 42 °C x 1.2 = 7601 W				= 0.124 x 441.15 x 9 °C x 1.2 = 576 W																																																					
= 25934 Btu/h				= 1966 Btu/h																																																					
5.2.3.2 Heat Loss due to Mechanical Ventilation				6.2.7 Sensible heat Gain due to Ventilation																																																					
$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$				$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																					
155 CFM x 76 °F x 1.08 x 0.25 = 3181 Btu/h				155 CFM x 16 °F x 1.08 x 0.25 = 661 Btu/h																																																					
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																									
$HL_{airr} = Level Factor \times HL_{airbv} \times \{(HL_{qgcr} + HL_{bgcr}) \div (HL_{qglevel} + HL_{bglevel})\}$																																																									
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*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairbv = 0																																																									

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** 5003 - THE OAKGROVE**BUILDER:** GOLD PARK HOMES**SFQT:** 3862**LO#** 77475**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)	72

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):	56085.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 61.0 ft	WIDTH: 40.0 ft	EXPOSED PERIMETER:	202.0 ft

2012 OBC - COMPLIANCE PACKAGE		Compliance Package A1	
Component		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	-

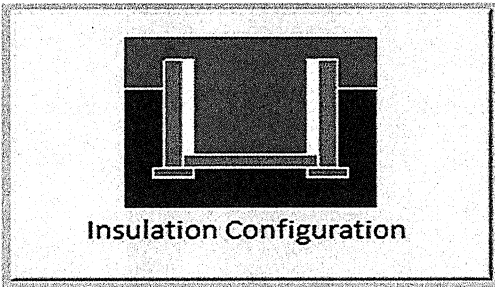
INDIVIDUAL BCIN: 19669

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):	18.6	 Insulation Configuration
Floor Width (m):	12.2	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	3.0	
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):		2025

TYPE: 5003 - THE OAKGROVE
LO# 77475

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):	1588.2			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	2117.1 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):	0.124			

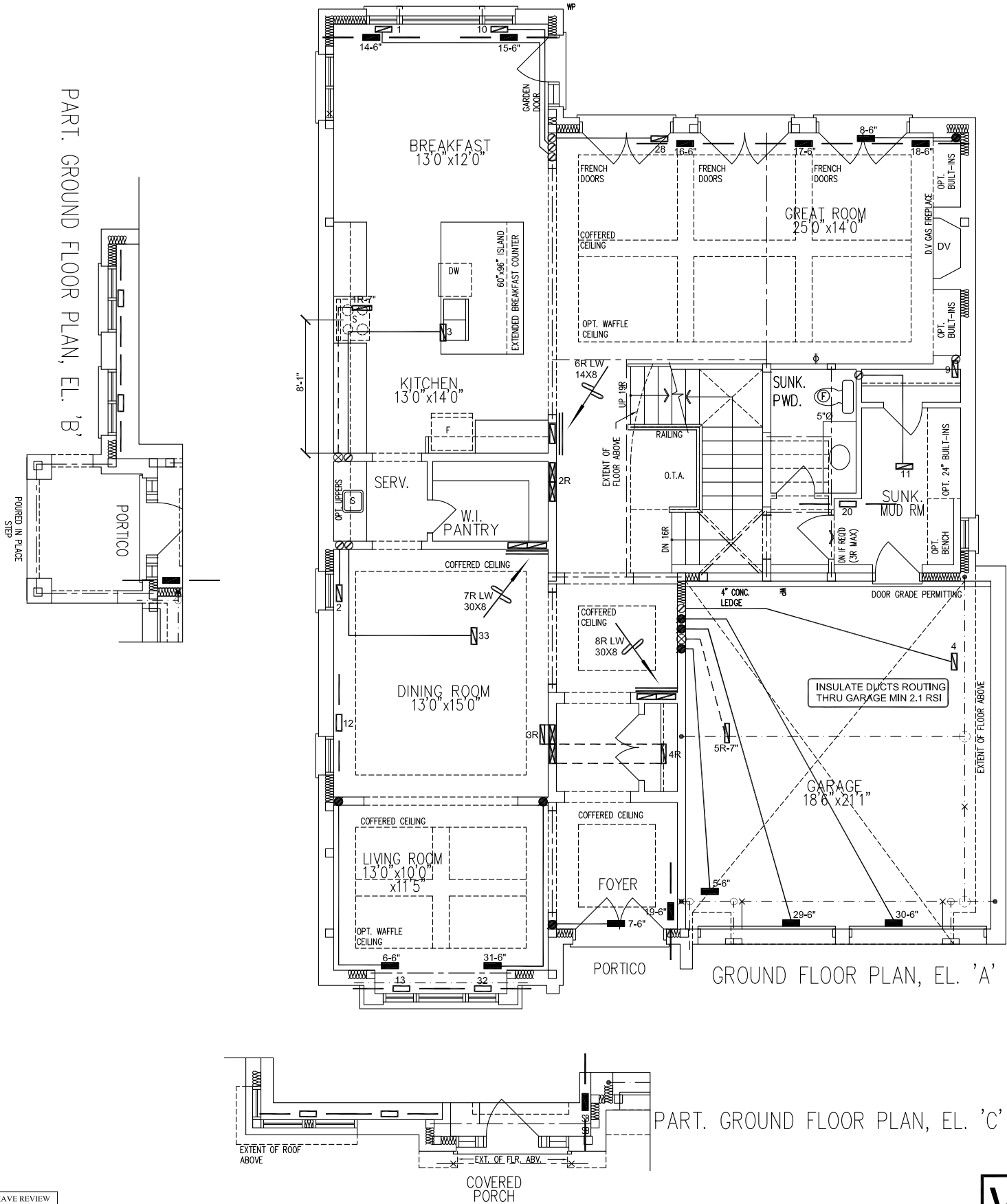
TYPE: 5003 - THE OAKGROVE
LO# 77475



WOD	CSA-F280-12
LOD	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	HEAT LOSS 75720 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			MODEL	EL296UH110XE60C		2ND FLOOR		16	5		4	
PINE VALLEY & TESTON VAUGHAN, ONTARIO			INPUT	110	MBTU/H	1ST FLOOR		10	3		2	
THE OAKGROVE 5003			OUTPUT	106	MBTU/H	BASEMENT		7	1	0	Date	JAN/2018
3862 sqft			COOLING	5.0	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
		FAN SPEED	1955	cfm @ 0.6" w.c.	BCIN# 19669							LO#



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.

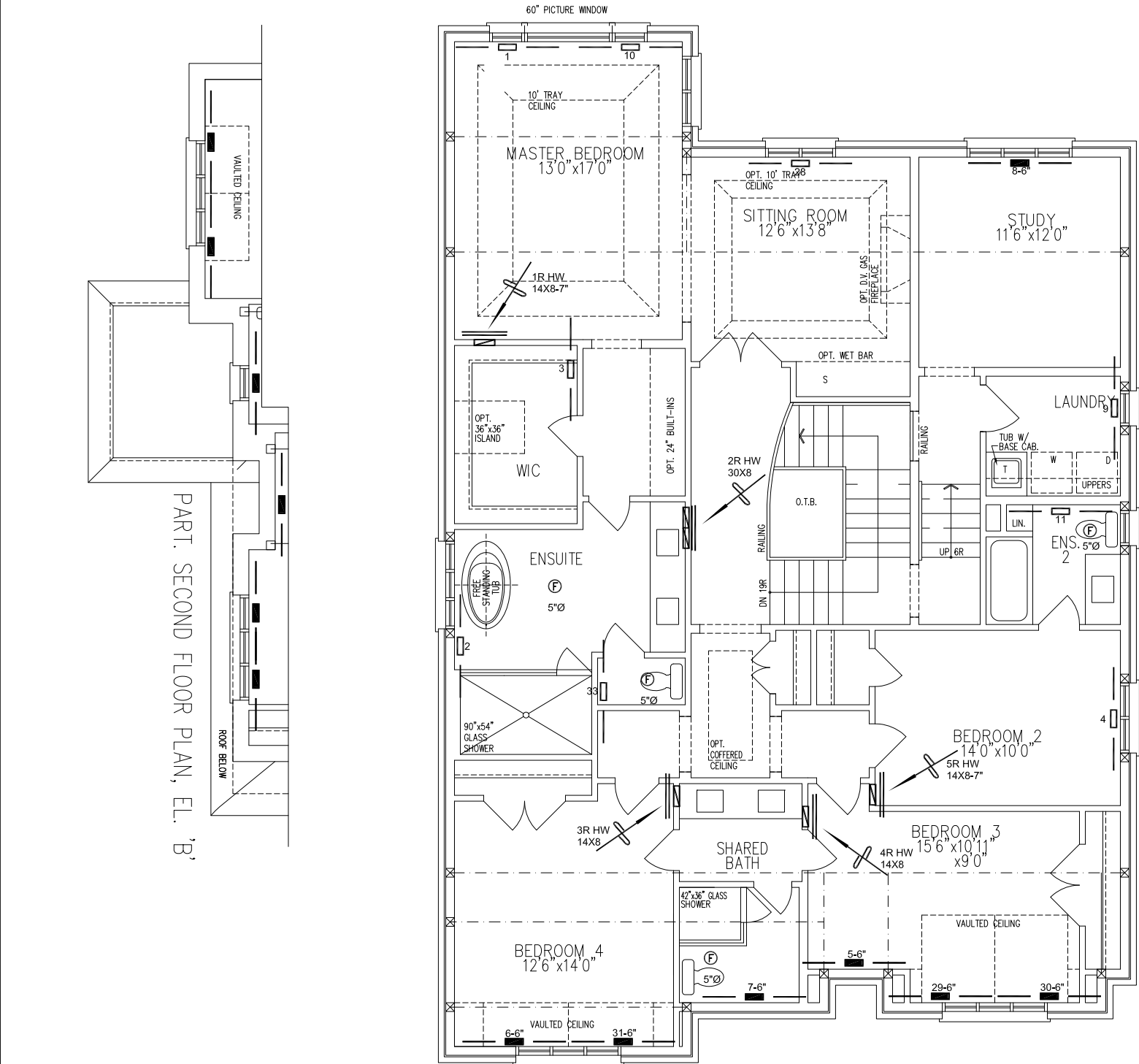
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

WOD	CSA-F280-12
LOD	PACKAGE A1

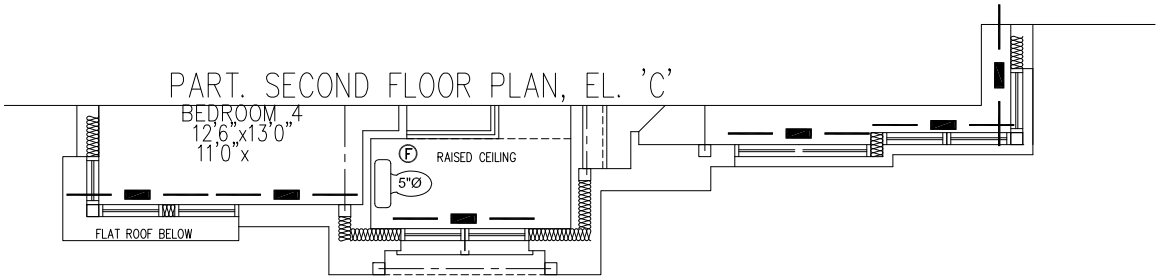
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	FEB/2020
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	DECK CONDITIONS ADDED	OCT/2018
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY 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		 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	JAN/2018
PINE VALLEY & TESTON VAUGHAN, ONTARIO			Scale	1/8" = 1'-0"
		BCIN# 19669		
THE OAKGROVE 5003 3862 sqft		LO#	77475	



SECOND FLOOR PLAN, EL. 'A'



PART. SECOND FLOOR PLAN, EL. 'C'

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.

WOD

LOD

CSA-F280-12

PACKAGE A1

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	FEB/2020
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	DECK CONDITIONS ADDED	OCT/2018
	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

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON VAUGHAN, ONTARIO

THE OAKGROVE 5003

3862 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

JAN/2018

Scale

1/8" = 1'-0"

BCIN# 19669

LO# 77475

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: 5003 - THE OAKGROVE OPT 5-BED Project: PINE VALLEY & TESTON		
D. Declaration of Designer				
I, <u>MICHAEL O'ROURKE</u> declare that (choose one as appropriate): (print name)				
☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____				
☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>				
☐ The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____				
I certify that:				
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.				
October 5, 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										DATE: Oct-18 LO# 77476		WINTER NATURAL AIR CHANGE RATE 0.340 SUMMER NATURAL AIR CHANGE RATE 0.124		HEAT LOSS AT °F. 76 HEAT GAIN AT °F. 16		CSA-F280-12 SB-12 PACKAGE A1	
TYPE: 5003 - THE OAK GROVE										OPT 5-BED		GFA: 3852		BATH-2		BATH-2	
ROOM USE EXP. WALL CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-5	LAUN	BATH-2		BATH-2		BATH-2		BATH-2	
FACTORS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS
GRS.WALL AREA	600	117	108	90	288	288	81	226	0	17	17	17	17	17	17	17	17
GLAZING	19	404	319	17	382	288	44	936	1866	0	0	0	0	0	0	0	0
NORTH	21.3	16.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EAST	21.3	42.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	21.3	25.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST	21.3	42.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYL.T.	37.2	103.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	25.2	5.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.5	0.9	420	1874	390	94	419	87	108	482	100	73	326	68	196	879	183
NET EXPOSED BMT WALL ABOVE GR	3.6	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	424	544	271	182	234	116	168	216	107	260	321	180	198	264	126
NO ATTIC EXPOSED CLG	2.7	1.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.8	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS	4121	1143	795	207	603	3913	1252	1675	282	140	647	20.20	0.28	389	52	1290	809
LEVEL FACTOR / MULTIPLIER	0.20	0.29	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
AIR CHANGE HEAT LOSS	1180	327	64	49	166	196	160	480	119	11	52	0.20	0.28	389	52	1290	809
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DUCT LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DUCT GAIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	240	480	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	770	770	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL HT LOSS BTU/H	5301	1470	1118	897	291	4728	1610	2165	3377	1198	1659	0.20	0.28	389	52	1290	809
TOTAL HT GAIN x 1.3 BTU/H	6635	4857	1118	291	2576	7482	2774	3377	1198	1198	1659	0.20	0.28	389	52	1290	809

TYPE: 5003 - THE OAK GROVE										DATE: Oct-18 LO# 77476		WINTER NATURAL AIR CHANGE RATE 0.340 SUMMER NATURAL AIR CHANGE RATE 0.124		HEAT LOSS AT °F. 76 HEAT GAIN AT °F. 16		CSA-F280-12 SB-12 PACKAGE A1	
TYPE: 5003 - THE OAK GROVE										OPT 5-BED		GFA: 3852		BATH-2		BATH-2	
ROOM USE EXP. WALL CLG. HT.	DIN	LIV	KT/IGT	BED-2	BED-3	BED-4	BATH	BED-5	LAUN	BATH-2		BATH-2		BATH-2		BATH-2	
FACTORS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS
GRS.WALL AREA	176	341	1034	90	288	288	81	226	0	17	17	17	17	17	17	17	17
GLAZING	19	404	319	17	382	288	44	936	1866	0	0	0	0	0	0	0	0
NORTH	21.3	16.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EAST	21.3	42.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	21.3	25.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST	21.3	42.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYL.T.	37.2	103.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	25.2	5.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.5	0.9	420	1874	390	94	419	87	108	482	100	73	326	68	196	879	183
NET EXPOSED BMT WALL ABOVE GR	3.6	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	424	544	271	182	234	116	168	216	107	260	321	180	198	264	126
NO ATTIC EXPOSED CLG	2.7	1.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.8	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS	1223	2648	8970	207	603	3913	1252	1675	282	140	647	20.20	0.28	389	52	1290	809
LEVEL FACTOR / MULTIPLIER	0.30	0.44	0.30	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
AIR CHANGE HEAT LOSS	634	1165	3914	49	166	196	160	480	119	11	52	0.20	0.28	389	52	1290	809
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DUCT LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DUCT GAIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	240	480	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	770	770	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL HT LOSS BTU/H	1756	3803	12884	897	291	4728	1610	2165	3377	1198	1659	0.20	0.28	389	52	1290	809
TOTAL HT GAIN x 1.3 BTU/H	2137	4857	15546	291	2576	7482	2774	3377	1198	1198	1659	0.20	0.28	389	52	1290	809

TOTAL HEAT GAIN BTU/H: 60132 TONS: 5.01 LOSS DUE TO VENTILATION LOAD BTU/H: 3181 STRUCTURAL HEAT LOSS: 72739 TOTAL COMBINED HEAT LOSS BTU/H: 76919

Michael O'Rourke

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

OPT 5-BED
TYPE: 5003 - THE OAKGROVE

DATE: Nov-18

GFA: 3862

LO# 77476

HEATING CFM 1955 COOLING CFM 1955
TOTAL HEAT LOSS 72,739 TOTAL HEAT GAIN 59,471
AIR FLOW RATE CFM 26.88 AIR FLOW RATE CFM 32.87

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

^LENNOX
EL296UH110XE60C 110
FAN SPEED
LOW 0
MEDLOW 1380
MEDIUM 1505
MEDIUM HIGH 1685
HIGH 1955

AFUE = 96 %
INPUT (BTU/H) = 110,000
OUTPUT (BTU/H) = 106,000

DESIGN CFM = 1955
CFM @ 8" E.S.P.

TEMPERATURE RISE 50 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	17	10	7
R/A	0	0	6	3	1

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

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

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-5	BATH-2	MBR	BATH-2	DIN	LIV	KT/GT	KT/GT	KT/GT	KT/GT	KT/GT	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.77	0.73	0.90	2.04	1.75	1.61	1.61	2.15	0.83	1.77	0.83	1.76	1.90	2.58	2.58	2.58	2.58	2.58	3.97	3.20	3.31	3.31	3.31	3.31
CFM PER RUN HEAT	47	20	24	55	47	43	43	58	22	47	22	47	51	69	69	69	69	69	107	86	89	89	89	89
RM GAIN MBH	2.21	0.56	0.29	2.38	2.50	2.36	2.77	3.38	0.45	2.21	0.45	2.14	2.43	3.11	3.11	3.11	3.11	3.11	0.81	1.81	0.49	0.49	0.49	0.49
CFM PER RUN COOLING	73	18	10	78	82	78	91	111	15	73	15	70	80	102	102	102	102	102	27	59	16	16	16	16
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.15	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	48	26	36	48	45	54	42	63	45	41	49	26	39	36	27	31	38	45	35	40	30	22	42	41
EQUIVALENT LENGTH	185	205	120	165	140	195	150	150	130	185	170	90	110	110	110	170	160	110	120	150	110	150	130	120
TOTAL EFFECTIVE LENGTH	233	231	156	213	185	249	192	213	175	226	219	116	149	146	137	201	198	155	155	190	140	172	172	161
ADJUSTED PRESSURE	0.07	0.07	0.11	0.08	0.09	0.07	0.08	0.07	0.1	0.08	0.08	0.15	0.12	0.11	0.12	0.08	0.08	0.1	0.1	0.09	0.12	0.09	0.09	0.1
ROUND DUCT SIZE	5	4	4	5	6	6	6	6	4	5	4	4	5	6	6	6	6	6	6	5	5	6	6	5
HEATING VELOCITY (ft/min)	345	229	275	404	240	219	219	296	252	345	252	539	374	352	352	352	352	352	546	631	653	454	454	653
COOLING VELOCITY (ft/min)	536	207	115	573	418	398	464	566	172	536	172	803	587	520	520	520	520	520	138	433	117	82	82	117
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10
TRUNK	A	E	C	E	E	D	D	F	F	A	B	E	D	A	A	B	B	F	D	B	A	A	F	F

RUN #	25	26	27	28	29	30	31	32	33	34
ROOM NAME	BAS	BAS	BAS	MBR	BED-3	BED-3	LIV	ENS	LAUN	
RM LOSS MBH	3.31	3.31	3.31	1.77	1.75	1.75	1.61	1.90	0.73	0.36
CFM PER RUN HEAT	89	89	89	47	47	47	43	51	20	10
RM GAIN MBH	0.49	0.49	0.49	2.21	2.50	2.50	2.36	2.43	0.56	1.20
CFM PER RUN COOLING	16	16	16	73	82	82	78	80	18	39
ADJUSTED PRESSURE	0.16	0.16	0.16	0.17	0.16	0.16	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH	21	23	36	38	52	56	43	34	37	48
EQUIVALENT LENGTH	180	100	130	160	145	155	190	100	195	190
TOTAL EFFECTIVE LENGTH	201	123	166	198	197	211	233	134	232	238
ADJUSTED PRESSURE	0.08	0.13	0.1	0.09	0.08	0.08	0.07	0.13	0.07	0.07
ROUND DUCT SIZE	6	5	5	5	5	5	6	5	4	4
HEATING VELOCITY (ft/min)	454	653	653	345	345	345	219	374	229	115
COOLING VELOCITY (ft/min)	82	117	117	536	602	602	398	587	207	447
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10
TRUNK	E	E	D	A	E	E	D	D	E	B

SUPPLY AIR TRUNK SIZE

	TRUNK	STATIC	ROUND	RECT			VELOCITY		TRUNK	STATIC	ROUND	RECT			VELOCITY	
	CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)	
TRUNK A	457	0.07	10.8	14	x	8	588		TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	583	0.07	11.8	16	x	8	656		TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	1064	0.07	14.8	26	x	8	737		TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	427	0.07	10.5	14	x	8	549		TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	888	0.07	13.9	22	x	8	727		TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	327	0.07	9.5	10	x	8	589		TRUNK L	0	0.00	0	0	x	8	0

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)	
TRUNK O	0	0.05	0	0	x	8	0
TRUNK P	0	0.05	0	0	x	8	0
TRUNK Q	0	0.05	0	0	x	8	0
TRUNK R	0	0.05	0	0	x	8	0
TRUNK S	0	0.05	0	0	x	8	0
TRUNK T	0	0.05	0	0	x	8	0
TRUNK U	0	0.05	0	0	x	8	0
TRUNK V	0	0.05	0	0	x	8	0
TRUNK W	0	0.05	0	0	x	8	0
TRUNK X	1665	0.05	19.1	34	x	10	705
TRUNK Y	590	0.05	12.9	20	x	8	531
TRUNK Z	0	0.05	0	0	x	8	0
DROP	1955	0.05	20.3	24	x	18	652

RETURN AIR #	1	2	3	4	5	6	7	8	9		BR
AIR VOLUME	0	0	0	0	0	0	0	0	0	0	265
PLENUM PRESSURE	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	50	26	44	49	53	17	19	32	66	1	14
EQUIVALENT LENGTH	175	135	185	190	185	160	135	145	215	0	135
TOTAL EFFECTIVE LH	225	161	229	239	238	177	154	177	281	1	149
ADJUSTED PRESSURE	0.07	0.09	0.06	0.06	0.06	0.08	0.10	0.08	0.05	14.80	0.10
ROUND DUCT SIZE	6.6	8.9	7.1	7.1	6.8	7.2	8.7	9.2	4.9	0	8.1
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	0	8
	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	30	14	14	14	14	30	30	14	0	24

TYPE: 5003 - THE OAKGROVE
SITE NAME: PINE VALLEY & TESTON

LO # 77476
OPT 5-BED

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	4 @ 10.6 cfm	42.4 cfm
Kitchen & Bathrooms	5 @ 10.6 cfm	53 cfm
Other Rooms	6 @ 10.6 cfm	63.6 cfm
Table 9.32.3.A.	TOTAL	201.4 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		95.4 cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	201.4	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	46.4	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
ENS	QTXEN050C	50	✓
BATH	QTXEN050C	50	✓
BATH-2	QTXEN050C	50	✓
PWD	QTXEN050C	50	✓

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:	October-18

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																															
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																															
LO#: 77476	Model: 5003 - THE OAK GROVE	Builder: GOLD PARK HOMES	Date: 10/5/2018																																																																												
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6.2.7 Sensible heat Gain due to Ventilation																																																																															
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																																															
155 CFM	x	76 °F	x																																																																												
		1.08	x																																																																												
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			661 Btu/h																																																																												
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																																															
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*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: 5003 - THE OAKGROVE	OPT 5-BED	BUILDER: GOLD PARK HOMES
SFQT: 3862	LO# 77476	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)	72

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):	56085.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 61.0 ft	WIDTH: 40.0 ft	EXPOSED PERIMETER:	202.0 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	-

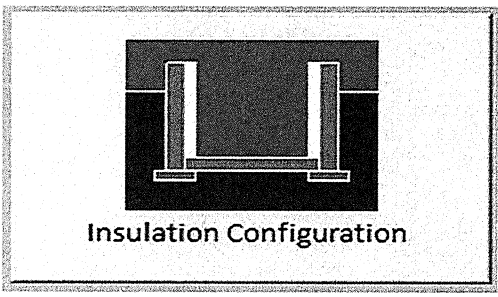
INDIVIDUAL BCIN: 19669

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):	18.6	 Insulation Configuration
Floor Width (m):	12.2	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	3.0	
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):		2025

TYPE: 5003 - THE OAKGROVE
LO# 77476

OPT 5-BED

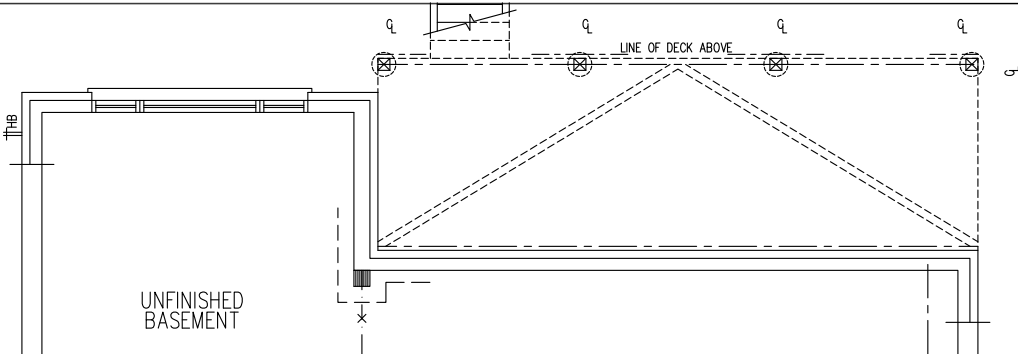
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

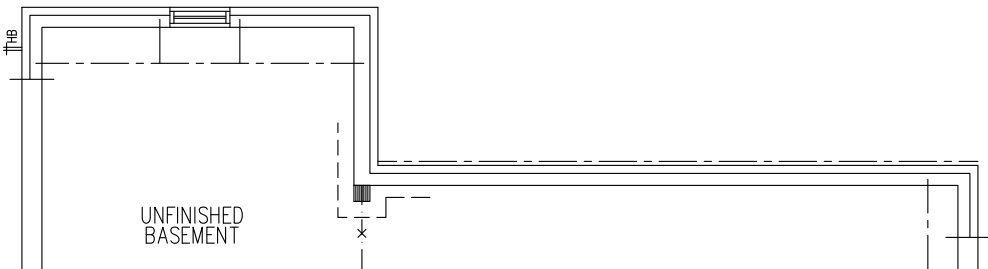
Weather Station Description				
Province:	Ontario			
Region:	Vaughan (Woodbridge)			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	7.01			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1588.2			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	2117.1 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):	0.124			

TYPE: 5003 - THE OAKGROVE
LO# 77476

OPT 5-BED

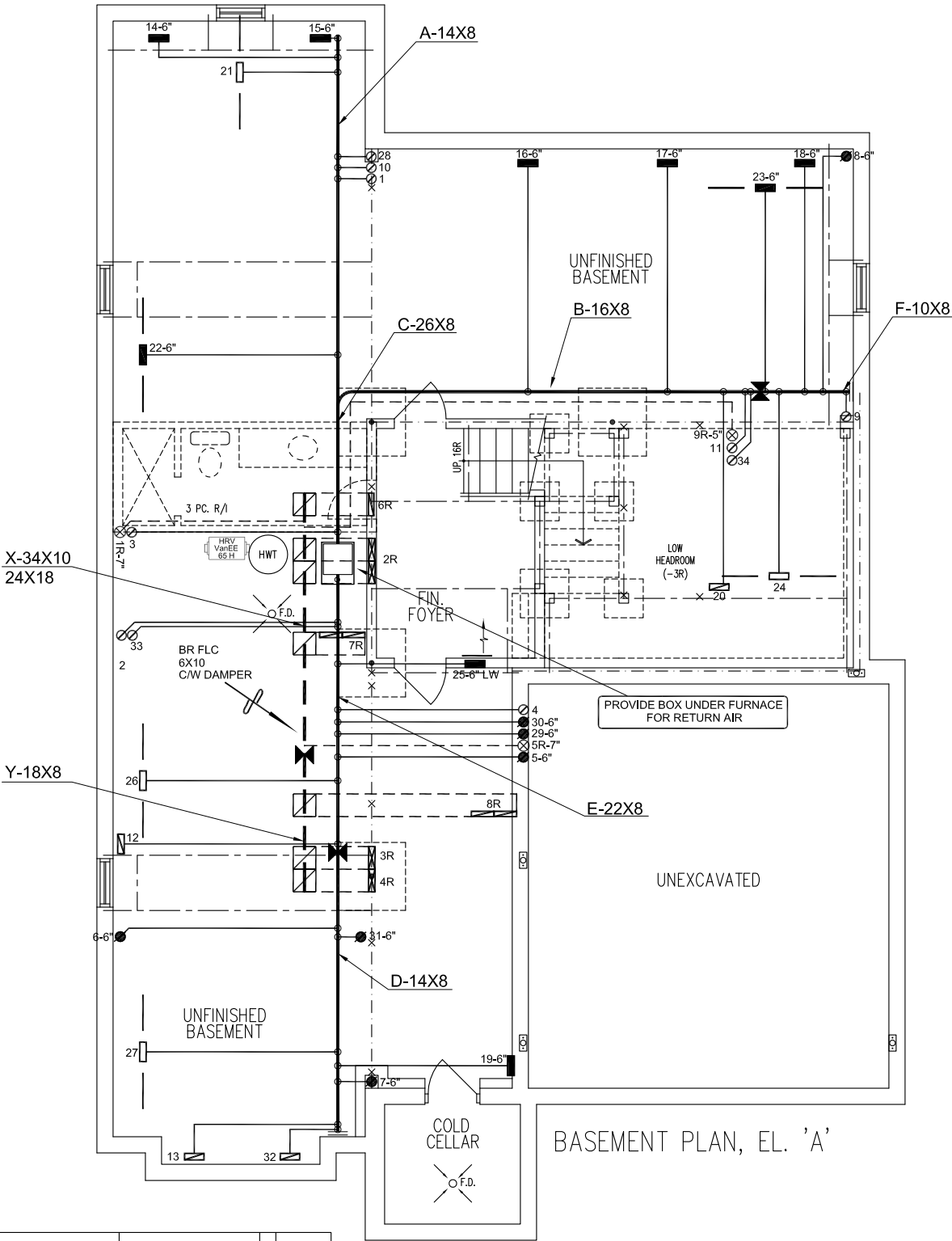
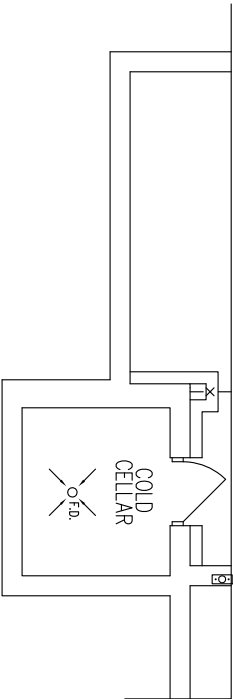


PART. BASEMENT PLAN ELEV. 'A', 'B' & 'C' - L.O.D. COND.

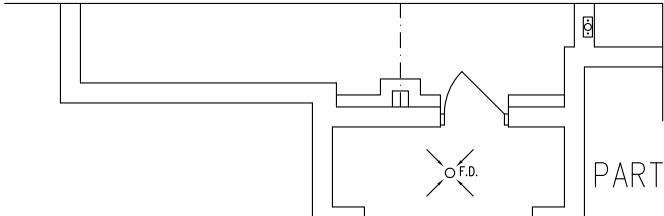


PART. BASEMENT PLAN ELEV. 'A', 'B' & 'C' - W.O.D. COND.

PART. BASEMENT PLAN, EL. 'B'



BASEMENT PLAN, EL. 'A'



PART. BASEMENT PLAN, EL. 'C'

LOD	CSA-F280-12
WOD	PACKAGE A1

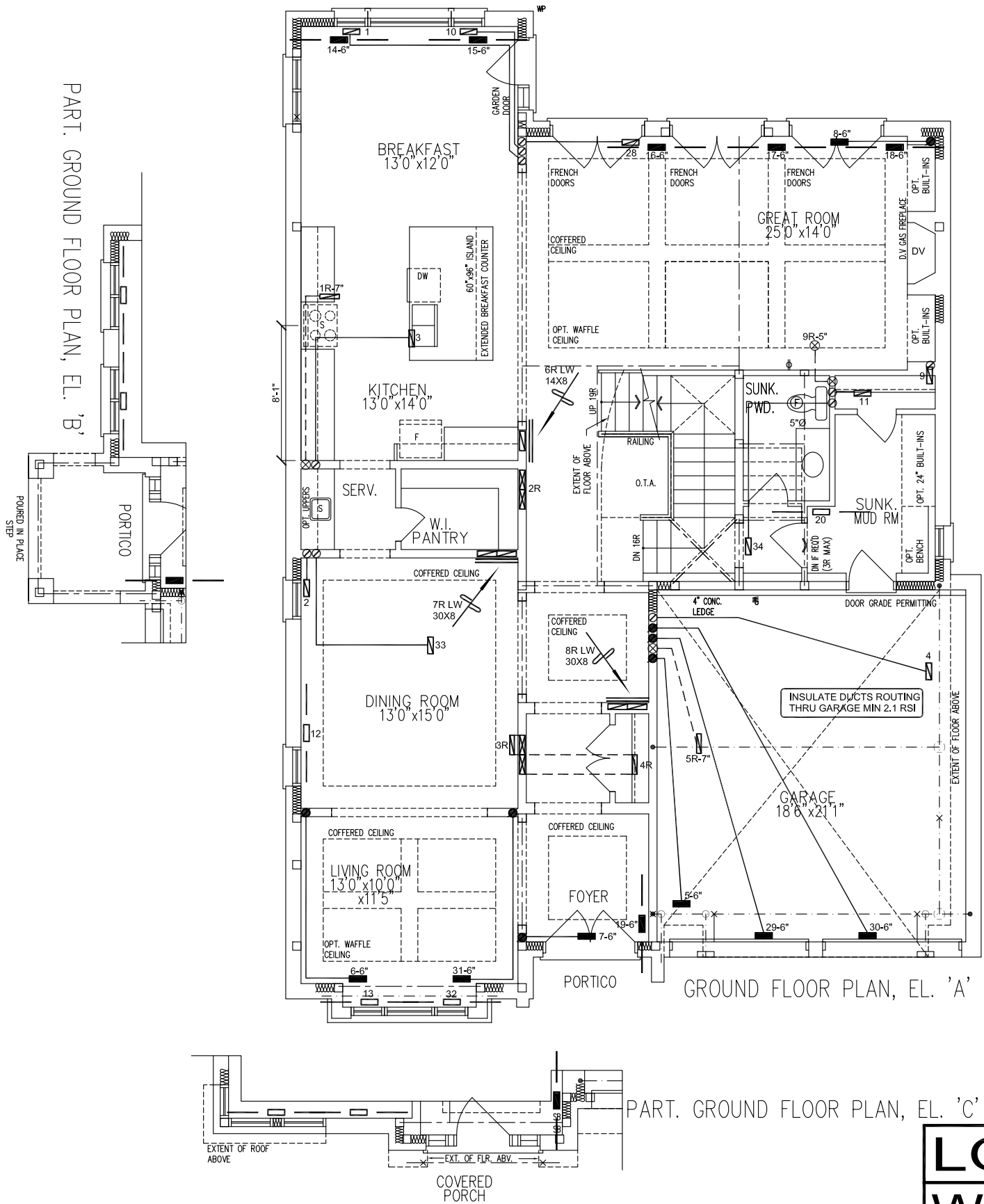
I MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

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

HVAC LEGEND								3.	REVISED AS PER ARCHITECTURALS	FEB/2020
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	ADDED RETURN # 9	OCT/2018
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	DECK CONDITIONS ADDED	OCT/2018
	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		

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

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 75919 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 OPT 5-BED THE OAKGROVE 5003 3862 sqft		MODEL EL296UH110XE60C			2ND FLOOR	17	6		6
		INPUT 110 MBTU/H			1ST FLOOR	10	3		2
		OUTPUT 106 MBTU/H			BASEMENT	7	1	0	
	COOLING 5.0 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			Date JAN/2018		
	FAN SPEED 1955 cfm @ 0.6" w.c.						Scale 1/8" = 1'-0"		
							BCIN# 19669		
							LO#	77476	



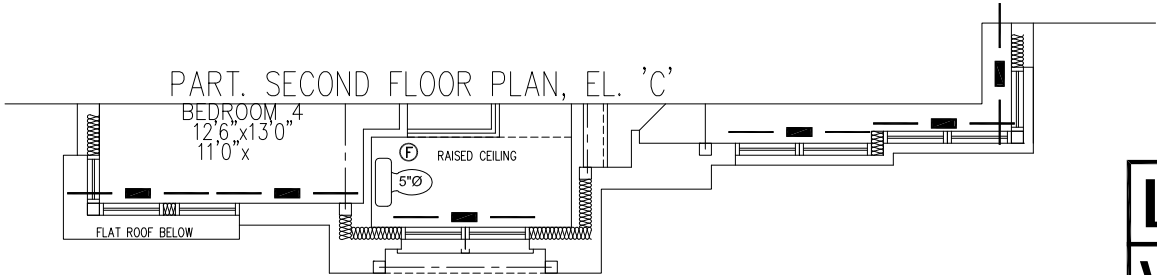
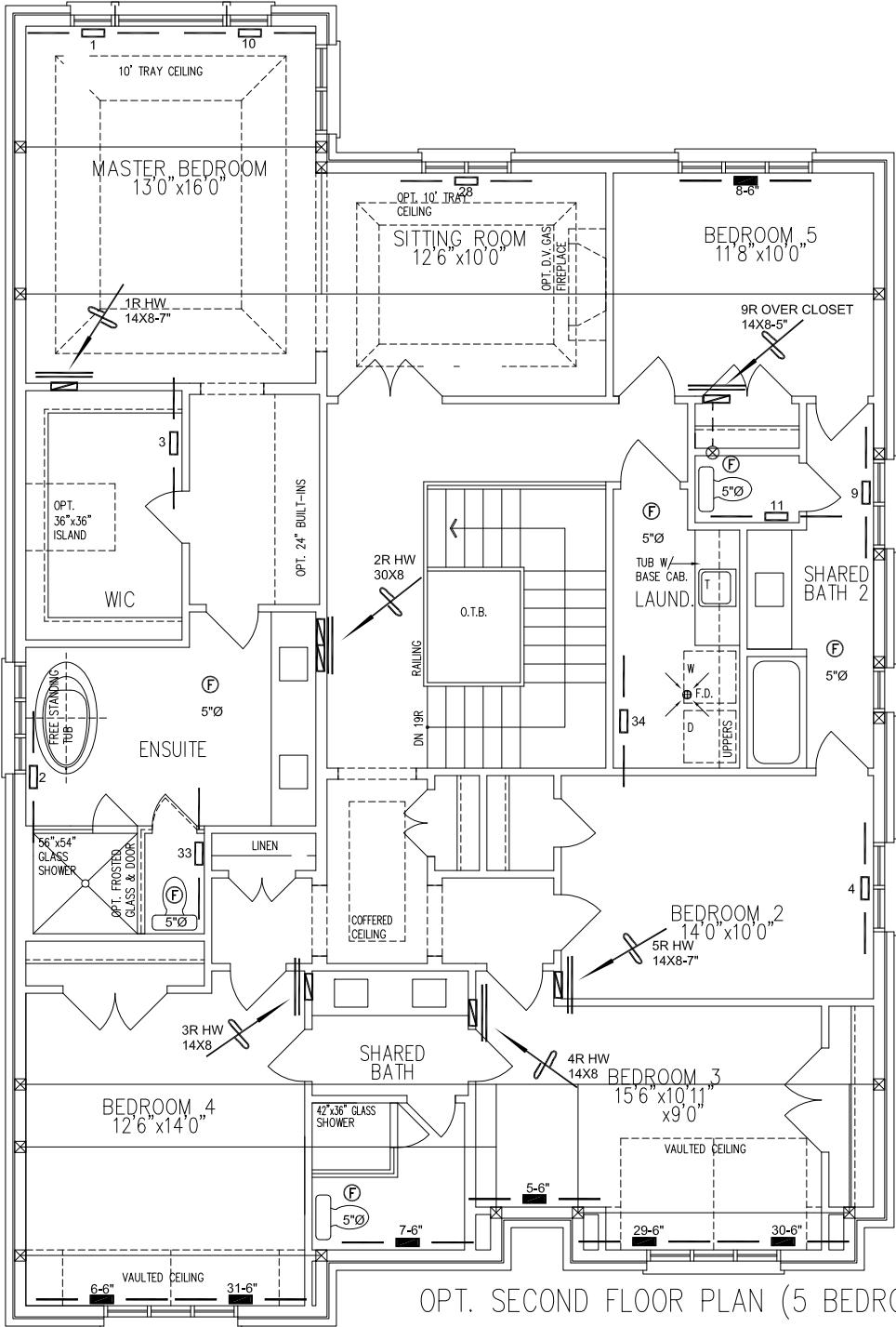
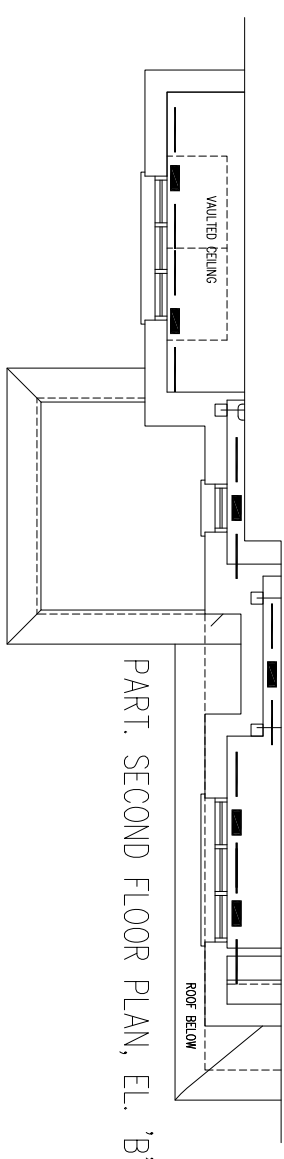
I MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

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

HVAC LEGEND								3.	REVISED AS PER ARCHITECTURALS	FEB/2020
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	2.	ADDED RETURN # 9	OCT/2018
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	1.	DECK CONDITIONS ADDED	OCT/2018
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	No.	Description	Date
								REVISIONS		

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

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	JAN/2018
PINE VALLEY & TESTON VAUGHAN, ONTARIO			Scale	1/8" = 1'-0"
OPT 5-BED THE OAKGROVE 5003			BCIN# 19669	
3862 sqft			LO#	77476



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.

LOD	CSA-F280-12
WOD	PACKAGE A1

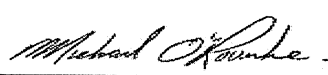
HVAC LEGEND								3.	REVISED AS PER ARCHITECTURALS	FEB/2020
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	ADDED RETURN # 9	OCT/2018
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	DECK CONDITIONS ADDED	OCT/2018
	SUPPLY 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		 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			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	JAN/2018
PINE VALLEY & TESTON VAUGHAN, ONTARIO			Scale	1/8" = 1'-0"
OPT 5-BED THE OAKGROVE 5003			BCIN# 19669	
3862 sqft			LO#	77476

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.
Municipality VAUGHAN (WOODBIDGE)			Postal code
Plan number/ other description			Lot/con.
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: 5003 - THE OAKGROVE OPT 5-BED - WOB 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.			
October 5, 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 BUILDING: GOLD PARK HOMES										DATE: Oct-18 LO# 80242										WINTER NATURAL AIR CHANGE RATE 0.407 SUMMER NATURAL AIR CHANGE RATE 0.137										HEAT LOSS AT °F. 76 HEAT GAIN AT °F. 13										CSA-F280-12 SB-12 PACKAGE A1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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SITE NAME: PINE VALLEY & TESTON
BUILDER: GOLD PARK HOMES

OPT 5-BED - WOB
TYPE: 5003 - THE OAKGROVE

DATE: Nov-18

GFA: 3862

LO# 80242

HEATING CFM 1955 COOLING CFM 1955
TOTAL HEAT LOSS 78,793 TOTAL HEAT GAIN 60,510
AIR FLOW RATE CFM 24.81 AIR FLOW RATE CFM 32.31

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

^LENNOX
EL296UH110XE60C 110
FAN SPEED
LOW 0
MEDLOW 1380
MEDIUM 1505
MEDIUM HIGH 1685
HIGH 1955

AFUE = 96 %
INPUT (BTU/H) = 110,000
OUTPUT (BTU/H) = 106,000

DESIGN CFM = 1955
CFM @ 8" E.S.P.

TEMPERATURE RISE 50 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	17	10	7
R/A	0	0	6	3	1

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

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

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-5	BATH-2	MBR	BATH-2	DIN	LIV	KT/GT	KT/GT	KT/GT	KT/GT	KT/GT	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.84	0.77	0.94	2.13	1.82	1.68	1.68	2.25	0.87	1.84	0.87	1.86	2.02	2.73	2.73	2.73	2.73	2.73	4.20	3.39	3.81	3.81	3.81	3.81
CFM PER RUN HEAT	46	19	23	53	45	42	42	56	21	46	21	46	50	68	68	68	68	68	104	84	94	94	94	94
RM GAIN MBH	2.06	0.52	0.25	2.11	2.34	2.19	2.67	3.10	0.41	2.06	0.41	1.90	2.25	2.94	2.94	2.94	2.94	2.94	0.64	1.52	1.23	1.23	1.23	1.23
CFM PER RUN COOLING	67	17	8	68	76	71	86	100	13	67	13	61	73	95	95	95	95	95	21	49	40	40	40	40
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	48	26	36	48	45	54	42	63	45	41	49	26	39	36	27	31	38	45	35	40	30	22	42	41
EQUIVALENT LENGTH	185	205	120	165	140	195	150	150	130	185	170	90	110	110	110	170	160	110	120	150	110	150	130	120
TOTAL EFFECTIVE LENGTH	233	231	156	213	185	249	192	213	175	226	219	116	149	146	137	201	198	155	155	190	140	172	172	161
ADJUSTED PRESSURE	0.07	0.07	0.11	0.08	0.09	0.07	0.08	0.08	0.1	0.08	0.08	0.15	0.12	0.11	0.12	0.08	0.08	0.1	0.1	0.09	0.12	0.09	0.09	0.1
ROUND DUCT SIZE	5	4	4	5	6	5	6	6	4	5	4	4	5	5	6	6	6	5	6	5	5	6	6	5
HEATING VELOCITY (ft/min)	338	218	264	389	229	308	214	286	241	338	241	528	367	499	347	347	347	499	530	617	690	479	479	690
COOLING VELOCITY (ft/min)	492	195	92	499	388	521	438	510	149	492	149	700	536	698	484	484	484	698	107	360	294	204	204	294
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	4X10	3X10	3X10	4X10	4X10	3X10
TRUNK	A	E	C	E	E	D	D	F	F	A	B	E	D	A	A	B	B	F	D	B	A	A	F	F

RUN #	25	26	27	28	29	30	31	32	33	34
ROOM NAME	BAS	BAS	BAS	MBR	BED-3	BED-4	LIV	ENS	LAUN	
RM LOSS MBH	3.81	3.81	3.81	1.84	1.82	1.68	2.02	0.77	0.38	
CFM PER RUN HEAT	94	94	94	46	45	42	50	19	9	
RM GAIN MBH	1.23	1.23	1.23	2.06	2.34	2.19	2.25	0.52	1.03	
CFM PER RUN COOLING	40	40	40	67	76	71	73	17	33	
ADJUSTED PRESSURE	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	
ACTUAL DUCT LGH	21	23	36	38	52	56	34	37	48	
EQUIVALENT LENGTH	180	100	130	160	145	155	190	100	195	
TOTAL EFFECTIVE LENGTH	201	123	166	198	197	211	233	134	238	
ADJUSTED PRESSURE	0.08	0.13	0.1	0.09	0.09	0.08	0.13	0.07	0.07	
ROUND DUCT SIZE	6	5	5	5	5	5	5	4	4	
HEATING VELOCITY (ft/min)	479	690	690	338	330	330	367	218	103	
COOLING VELOCITY (ft/min)	204	294	294	492	558	558	521	536	379	
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	
TRUNK	E	E	D	A	E	E	D	E	B	

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)
TRUNK A	462	0.07	10.9	14	x	8	594	TRUNK G	0	0.00	0	0	8
TRUNK B	583	0.07	11.8	16	x	8	656	TRUNK H	0	0.00	0	0	8
TRUNK C	1068	0.07	14.9	26	x	8	739	TRUNK I	0	0.00	0	0	8
TRUNK D	424	0.07	10.5	14	x	8	545	TRUNK J	0	0.00	0	0	8
TRUNK E	884	0.07	13.8	22	x	8	723	TRUNK K	0	0.00	0	0	8
TRUNK F	333	0.08	9.3	10	x	8	599	TRUNK L	0	0.00	0	0	8

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	x	8
TRUNK P	0	0.05	0	0	x	8
TRUNK Q	0	0.05	0	0	x	8
TRUNK R	0	0.05	0	0	x	8
TRUNK S	0	0.05	0	0	x	8
TRUNK T	0	0.05	0	0	x	8
TRUNK U	0	0.05	0	0	x	8
TRUNK V	0	0.05	0	0	x	8
TRUNK W	0	0.05	0	0	x	8
TRUNK X	1665	0.05	19.1	34	x	10
TRUNK Y	590	0.05	12.9	20	x	8
TRUNK Z	0	0.05	0	0	x	8
DROP	1955	0.05	20.3	24	x	18

RETURN AIR #	1	2	3	4	5	6	7	8	9		BR
AIR VOLUME	0	0	0	0	0	0	0	0	0	0	265
PLENUM PRESSURE	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	50	26	44	49	53	17	19	32	66	1	14
EQUIVALENT LENGTH	175	135	185	190	185	160	135	145	215	0	135
TOTAL EFFECTIVE LH	225	161	229	239	238	177	154	177	281	1	149
ADJUSTED PRESSURE	0.07	0.09	0.06	0.06	0.06	0.08	0.10	0.08	0.05	14.80	0.10
ROUND DUCT SIZE	6.6	8.9	7.1	7.1	6.8	7.2	8.7	9.2	4.9	0	8.1
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	0	8
	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	30	14	14	14	14	30	30	14	0	24

TYPE: 5003 - THE OAKGROVE
SITE NAME: PINE VALLEY & TESTON

LO # 80242
OPT 5-BED - WOB

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES		9.32.3.1(1)
a) ☒	Direct vent (sealed combustion) only	
b) ☐	Positive venting induced draft (except fireplaces)	
c) ☐	Natural draft, B-vent or induced draft gas fireplace	
d) ☐	Solid Fuel (including fireplaces)	
e) ☐	No Combustion Appliances	

HEATING SYSTEM	
☒	Forced Air
☐	Non Forced Air
☐	Electric Space Heat

HOUSE TYPE		9.32.1(2)
☒	I Type a) or b) appliance only, no solid fuel	
☐	II Type I except with solid fuel (including fireplaces)	
☐	III Any Type c) appliance	
☐	IV Type I, or II with electric space heat	
☐	Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS		O.N.H.W.P.
☐	1 Exhaust only/Forced Air System	
☐	2 HRV with Ducting/Forced Air System	
☒	3 HRV Simplified/connected to forced air system	
☐	4 HRV with Ducting/non forced air system	
☐	Part 6 Design	

TOTAL VENTILATION CAPACITY		9.32.3.3(1)
Basement + Master Bedroom	2 @ 21.2 cfm	42.4 cfm
Other Bedrooms	4 @ 10.6 cfm	42.4 cfm
Kitchen & Bathrooms	5 @ 10.6 cfm	53 cfm
Other Rooms	6 @ 10.6 cfm	63.6 cfm
Table 9.32.3.A.	TOTAL	201.4 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		95.4 cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	201.4	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	46.4	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
ENS	QTXEN050C	50	☒
BATH	QTXEN050C	50	☒
BATH-2	QTXEN050C	50	☒
PWD	QTXEN050C	50	☒

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:	October-18

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																	
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																	
LO#: 80242		Model: 5003 - THE OAKGROVE		Builder: GOLD PARK HOMES		Date: 10/5/2018																																																											
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5.2.3.1 Heat Loss due to Air Leakage				6.2.6 Sensible Gain due to Air Leakage																																																													
$HL_{airb} = LR_{airb} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$				$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$																																																													
0.407 x 441.15 x 42 °C x 1.2 = 9094 W				= 0.137 x 441.15 x 7 °C x 1.2 = 514 W																																																													
= 31030 Btu/h				= 1753 Btu/h																																																													
5.2.3.2 Heat Loss due to Mechanical Ventilation				6.2.7 Sensible heat Gain due to Ventilation																																																													
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$				$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																													
155 CFM x 76 °F x 1.08 x 0.25 = 3181 Btu/h				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)																																																																	
$HL_{airr} = Level Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																																	
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*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: 5003 - THE OAKGROVE	OPT 5-BED - WOB	BUILDER: GOLD PARK HOMES
SFQT: 3862	LO# 80242	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):	56085.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
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: 61.0 ft	WIDTH: 40.0 ft	EXPOSED PERIMETER:	152.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	50.0 ft

2012 OBC - COMPLIANCE PACKAGE

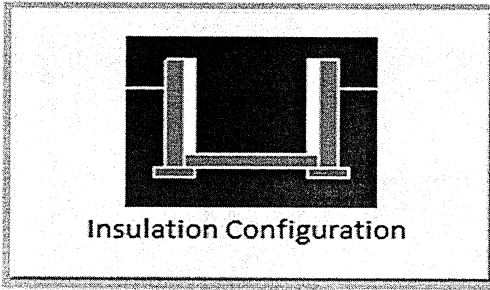
Component	Compliance Package A1	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20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

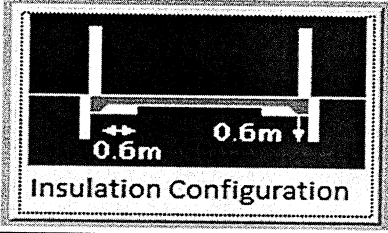
Weather Station Description		
Province:	Ontario	
Region:	Vaughan (Woodbridge)	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	4.6	 Insulation Configuration
Floor Width (m):	12.2	
Exposed Perimeter (m):	46.3	
Wall Height (m):	3.0	
Depth Below Grade (m):	1.83	
Window Area (m ²):	0.8	
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):		814

TYPE: 5003 - THE OAKGROVE
LO# 80242

OPT 5-BED - 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):	12.2	
Exposed Perimeter (m):	15.2	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		204

TYPE: 5003 - THE OAKGROVE
LO# 80242

OPT 5-BED - WOB

Air Infiltration Residential Load Calculator

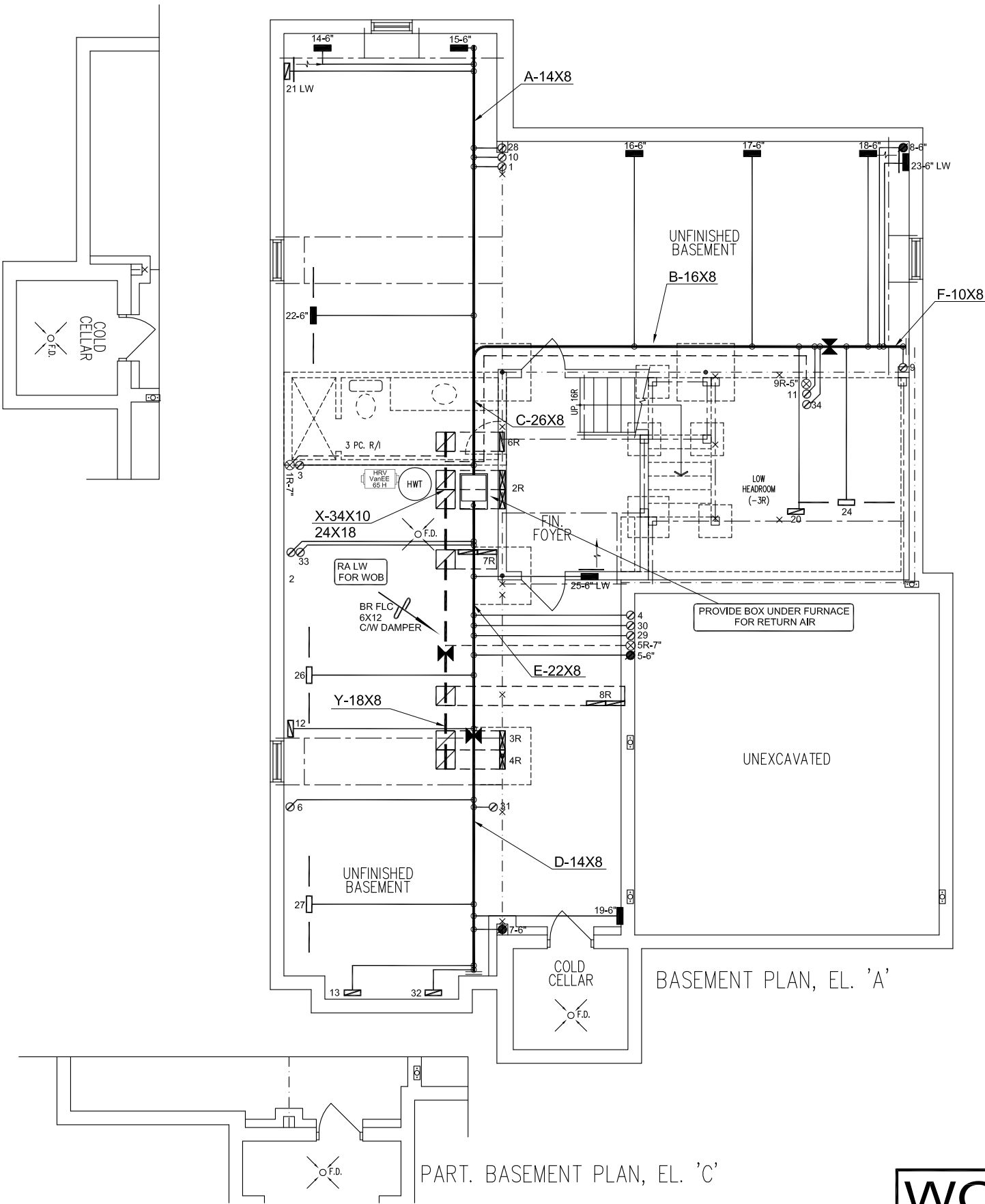
Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Vaughan (Woodbridge)			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	9.14			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1588.2			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	2117.1 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: 5003 - THE OAKGROVE
LO# 80242

OPT 5-BED - WOB

PART. 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.

PART. BASEMENT PLAN, EL. 'C'

CSA-F280-12

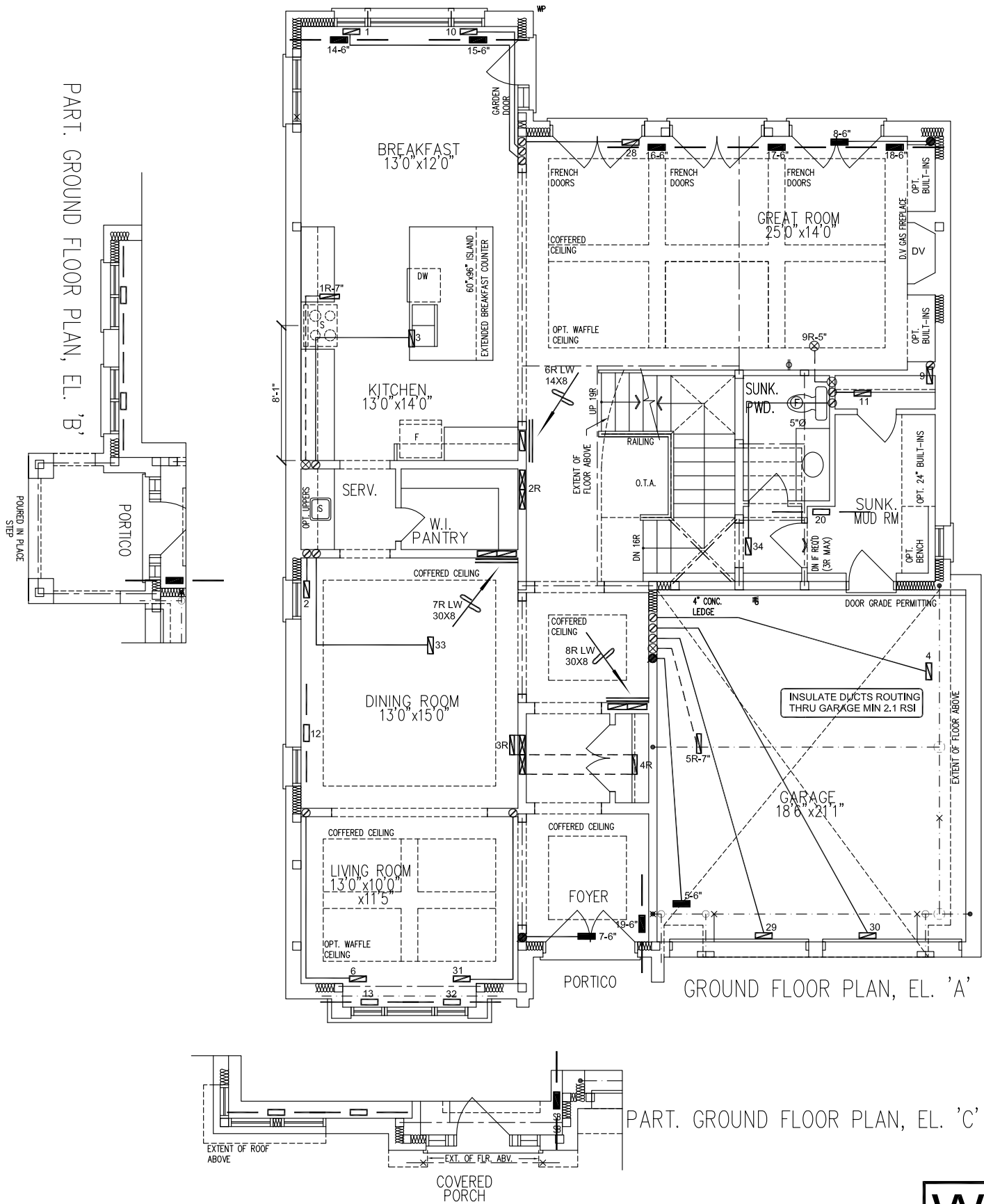
WOB

PACKAGE A1

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	FEB/2020
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	ADDED RETURN # 9	NOV/2018
	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	 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 81973 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		MODEL EL296UH110XE60C		2ND FLOOR	17	6	6	
PINE VALLEY & TESTON VAUGHAN, ONTARIO		INPUT 110 MBTU/H		1ST FLOOR	10	3	2	
OPT 5-BED - WOB THE OAKGROVE 5003 3862 sqft		OUTPUT 106 MBTU/H		BASEMENT	7	1	0	Date OCT/2018
	COOLING 5.0 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 1955 cfm @ 0.6" w.c.					BCIN# 19669		
						LO#	80242	



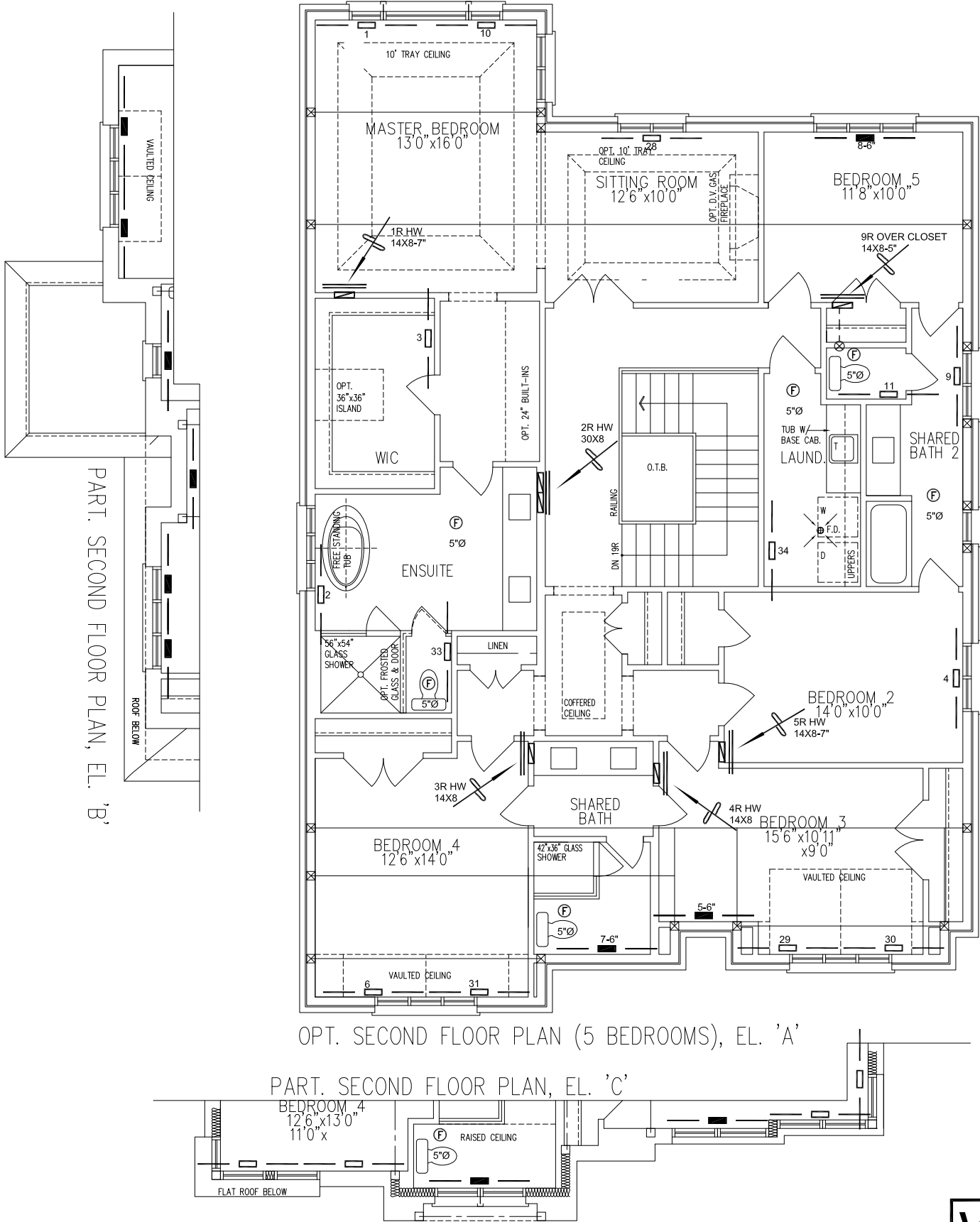
I MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

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

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	FEB/2020
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	ADDED RETURN # 9	NOV/2018
	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		

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

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	OCT/2018
PINE VALLEY & TESTON VAUGHAN, ONTARIO			Scale	1/8" = 1'-0"
OPT 5-BED - WOB			BCIN# 19669	
THE OAKGROVE			LO#	80242
5003	3862 sqft			



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

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	FEB/2020
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	ADDED RETURN # 9	NOV/2018
	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		 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			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	OCT/2018
PINE VALLEY & TESTON VAUGHAN, ONTARIO			Scale	1/8" = 1'-0"
OPT 5-BED - WOB			BCIN# 19669	
THE OAKGROVE			LO#	80242
5003	3862 sqft			

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: 5003 - THE OAKGROVE WOB 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.				
October 5, 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				WOB		TYPE: 5003 - THE OAKGROVE		GFA: 3862		DATE: Oct-18		WINTER NATURAL AIR CHANGE RATE		HEAT LOSS AT °F. 76		CSA-F280-12							
BUILDER: GOLD PARK HOMES				LO# 80241		SUMMER NATURAL AIR CHANGE RATE 0.137		HEAT GAIN AT °F. 13		SB-12 PACKAGE A1													
ROOM USE		EXP. WALL CLG. HT.		MBR		ENS		WIC		BED-2		BED-3		BED-4		BATH		STUDY		LAUN		ENS-2	
GRS.WALL AREA		GLAZING		FACTORS		LOSS		GAIN		LOSS		GAIN		LOSS		GAIN		LOSS		GAIN		LOSS	
NORTH		21.3		16.0		0		0		17		382		272		19		404		304		0	
EAST		21.3		41.6		0		0		0		0		0		74		1575		3075		40	
SOUTH		21.3		24.9		0		0		0		0		0		0		0		0		0	
WEST		21.3		41.5		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		420		1874		316		94		419		71		108		482		81	
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		424		544		249		182		234		107		168		216		99	
NO ATTIC EXPOSED CLG		2.7		1.3		0		0		0		0		0		0		0		0		0	
EXPOSED FLOOR		2.6		0.4		0		0		0		0		0		0		0		0		0	
BASEMENT/CRAWL HEAT LOSS						0		0		0		0		0		0		0		0		0	
SLAB ON GRADE HEAT LOSS						0		0		0		0		0		0		0		0		0	
SUBTOTAL HT LOSS		4121				1143		698		1442		3706		2510		1252		1732		657		557	
SUB TOTAL HT GAIN						0.20		0.35		0.20		0.35		0.20		0.35		0.20		0.35		0.20	
LEVEL FACTOR / MULTIPLIER		1427				396		242		499		1284		869		434		600		228		228	
AIR CHANGE HEAT LOSS						0		0		194		499		0		0		0		0		0	
AIR CHANGE HEAT GAIN						0		0		147		491		0		0		0		0		0	
DUCT LOSS						0		0		1		240		1		240		0		0		0	
DUCT GAIN						0		0		652		652		652		652		652		652		652	
HEAT GAIN PEOPLE		240				2		0		0		0		0		0		0		0		0	
HEAT GAIN APPLANCES/LIGHTS						5548				2136		5489		3380		1685		2332		885		885	
TOTAL HT LOSS BTU/H						6186				1039		1538		1039									
TOTAL HT GAIN x 1.3 BTU/H																							

ROOM USE	EXP. WALL CLG. HT.	DIN	LIV	KITCH	WIC	BED-2	BED-3	BED-4	BATH	STUDY	LAUN	ENS-2												
GRS.WALL AREA	GLAZING	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS												
NORTH	21.3	16.0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	21.3	24.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST	21.3	41.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	37.2	101.5	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
NET EXPOSED WALL	4.5	0.8	150	669	113	276	1232	207	775	3459	583	62	1565	264	268	1196	201	343	1531	258	20	505	85	20
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
EXPOSED CLG	1.3	0.6	0	0	0	0	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	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	0	0	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS			1223																					
SUB TOTAL HT GAIN			760																					
LEVEL FACTOR / MULTIPLIER			0.30	0.52								0.30	0.52											
AIR CHANGE HEAT LOSS			638									0.30	0.52											
AIR CHANGE HEAT GAIN			0									0.30	0.52											
DUCT LOSS			0									0	0	0	0	0	0	0	0	0	0	0	0	0
DUCT GAIN			0									0	0	0	0	0	0	0	0	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
HEAT GAIN APPLANCES/LIGHTS			652									652												
TOTAL HT LOSS BTU/H			1861									13654												
TOTAL HT GAIN x 1.3 BTU/H												14698												

	WOB		
	TYPE: 5003 - THE OAKGROVE	DATE: Oct-18	GFA: 3862 LO# 80241

*LENNOX		AFUE = 96 %	
EL296UH110XE60C		INPUT (BTU/H) = 110,000	
FAN SPEED		OUTPUT (BTU/H) = 106,000	
LOW	0	DESIGN CFM =	1955
MEDLOW	1380	CFM @ .6" E.S.P. =	
MEDIUM	1505		
MEDIUM HIGH	1685		
HIGH	1955	TEMPERATURE RISE	50 °F

TEMPERATURE RISE 50 °F

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	1.85	0.77	0.94	2.14	1.83	1.69	2.33	2.33	1.85	2.02	1.86	2.02	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73
RM LOSS MBH	46	19	23	53	46	42	42	58	22	46	22	46	50	68	68	68	68	68	68	84	95	95	95	95
CFM PER RUN HEAT	2.06	0.52	0.25	2.11	2.34	2.19	2.67	2.81	1.25	2.06	0.40	1.90	2.25	2.94	2.94	2.94	2.94	2.94	2.94	1.52	1.23	1.23	1.23	1.23
RM GAIN MBH	67	17	8	69	76	71	87	92	41	67	13	62	73	96	96	96	96	96	21	50	40	40	40	
CFM PER RUN COOLING	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
ADJUSTED PRESSURE	48	26	36	48	45	54	42	63	45	41	49	26	39	36	27	31	38	45	35	40	45	22	57	
ACTUAL DUCT LGH.	185	205	120	165	140	195	150	150	130	185	170	90	110	110	110	170	160	110	120	150	140	130	120	
EQUIVALENT LENGTH	233	231	156	213	185	249	192	213	175	226	219	116	149	146	137	201	198	155	155	190	185	172	187	
TOTAL EFFECTIVE LENGTH	0.07	0.07	0.11	0.08	0.09	0.07	0.08	0.08	0.1	0.08	0.08	0.15	0.12	0.11	0.12	0.08	0.08	0.1	0.1	0.09	0.09	0.09	0.1	
ADJUSTED PRESSURE	5	4	4	5	5	5	6	6	4	5	4	4	5	5	6	6	6	6	6	5	6	6	5	
ROUND DUCT SIZE	338	218	264	389	235	308	214	296	252	338	252	528	367	499	347	347	347	347	535	617	484	484	484	
HEATING VELOCITY (ft/min)	338	218	264	389	235	308	214	296	252	338	252	528	367	499	347	347	347	347	535	617	484	484	484	
COOLING VELOCITY (ft/min)	492	195	92	507	388	521	444	469	470	492	149	711	536	705	489	489	489	489	107	367	204	204	204	
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	4X10	4X10	4X10	
TRUNK	A	E	C	E	E	D	D	B	B	A	B	E	D	A	A	B	B	B	D	B	A	A	R	

25	26	27	28	29	30	31	32	33
RUN #	BAS	BAS	MBR	BED-3	BED-3	BED-4	LIV	ENS
ROOM NAME	BAS	BAS	MBR	BED-3	BED-3	BED-4	LIV	ENS
RM LOSS MBH.	3.81	3.81	1.83	1.83	1.83	1.83	2.02	0.77
CFM PER RUN HEAT	95	95	46	46	46	42	50	19
RM GAIN MBH.	1.23	1.23	2.06	2.34	2.34	2.19	2.25	0.52
CFM PER RUN COOLING	40	40	67	76	76	71	73	17
ADJUSTED PRESSURE	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	21	23	38	52	56	43	34	37
EQUIVALENT LENGTH	180	100	130	160	145	155	190	195
TOTAL EFFECTIVE LENGTH	201	123	166	198	197	211	233	134
ADJUSTED PRESSURE	0.08	0.13	0.1	0.09	0.08	0.07	0.13	0.07
ROUND DUCT SIZE	6	5	5	5	5	5	5	4
HEATING VELOCITY (ft/min)	484	698	338	338	338	308	367	218
COOLING VELOCITY (ft/min)	204	294	492	558	558	521	536	195
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	E	D	A	E	E	D	D	E

SUPPLY AIR TRUNK SIZE										RETURN AIR TRUNK SIZE									
TRUNK					VELOCITY					TRUNK					VELOCITY				
CFM	ROUND	RECT	STATIC PRESS.	DUCT	CFM	ROUND	RECT	STATIC PRESS.	DUCT	CFM	ROUND	RECT	STATIC PRESS.	DUCT	CFM	ROUND	RECT	STATIC PRESS.	DUCT
464	10.9	14	0.07	597	8	8	8	0.00	0	0	0	0	0.05	0	0	0	0	0.05	0
TRUNK A										TRUNK G					TRUNK P				
580	11.4	16	0.08	853	8	8	8	0.00	0	0	0	0	0.06	0	0	0	0	0.06	0
TRUNK B										TRUNK H					TRUNK Q				
1067	14.9	26	0.07	739	8	8	8	0.00	0	0	0	0	0.06	0	0	0	0	0.06	0
TRUNK C										TRUNK I					TRUNK R				
426	10.5	14	0.07	548	8	8	8	0.00	0	0	0	0	0.06	0	0	0	0	0.06	0
TRUNK D										TRUNK J					TRUNK S				
891	13.9	22	0.07	729	8	8	8	0.00	0	0	0	0	0.06	0	0	0	0	0.06	0
TRUNK E										TRUNK K					TRUNK T				
0	0	0	0.00	0	8	8	8	0.00	0	0	0	0	0.06	0	0	0	0	0.06	0
TRUNK F										TRUNK L					TRUNK Z				

RETURN AIR #	1	2	3	4	5	6	7	8	BR	TRUNK V	TRUNK W	TRUNK X	TRUNK Y	TRUNK Z	DROP	0.05	0	0	8	0	0
AIR VOLUME	120	360	135	135	120	170	320	320	0	0	0	0	0	0	0	0.06	0	0	8	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	0.06	18.2	34	10	705	0
ACTUAL DUCT LGH.	50	26	44	49	53	17	19	32	1	1	1	1	1	1	1	0.06	12.4	18	8	590	0
EQUIVALENT LENGTH	175	135	185	190	185	160	135	145	0	0	0	0	0	0	0	0.06	0	0	8	0	0
TOTAL EFFECTIVE LH	225	161	229	239	238	177	154	177	1	1	1	1	1	1	1	0.06	19.4	24	18	652	0
ADJUSTED PRESSURE	0.07	0.09	0.06	0.06	0.06	0.08	0.08	0.08	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10					
ROUND DUCT SIZE	6.6	9.3	7.1	7.1	6.8	7.2	8.7	9.2	0	0	0	0	0	0	0	8.2					
INLET GRILL SIZE	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	8					
INLET GRILL SIZE	14	30	14	14	14	14	30	30	0	0	0	0	0	0	0	24					

TYPE: 5003 - THE OAKGROVE
SITE NAME: PINE VALLEY & TESTON

LO # 80241
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	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	7 @ 10.6 cfm	74.2 cfm
Table 9.32.3.A.	TOTAL	201.4 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	201.4	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	46.4	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
BATH	QTXEN050C	50	☒	0.3
ENS-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:	October-18

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																													
Formula Sheet (For Air Leakage / Ventilation Calculation)																																													
LO#: 80241		Model: 5003 - THE OAKGROVE		Builder: GOLD PARK HOMES		Date: 10/5/2018																																							
Volume Calculation																																													
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="4">House Volume</th> </tr> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> <tr> <td>Bsmt</td> <td>1760</td> <td>10</td> <td>17600</td> </tr> <tr> <td>First</td> <td>1760</td> <td>11</td> <td>19360</td> </tr> <tr> <td>Second</td> <td>2125</td> <td>9</td> <td>19125</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">Total:</td> <td></td> <td>56,085.0 ft³</td> </tr> <tr> <td colspan="2">Total:</td> <td></td> <td>1588.2 m³</td> </tr> </table>										House Volume				Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1760	10	17600	First	1760	11	19360	Second	2125	9	19125	Third	0	9	0	Fourth	0	9	0	Total:			56,085.0 ft³	Total:			1588.2 m³
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Total:			1588.2 m³																																										
Air Change & Delta T Data																																													
				WINTER NATURAL AIR CHANGE RATE		0.407																																							
				SUMMER NATURAL AIR CHANGE RATE		0.137																																							
Design Temperature Difference																																													
				Tin °C		Tout °C		ΔT °C																																					
				22		-20		42																																					
				24		31		7																																					
				Winter DTDh				76																																					
				Summer DTDc				13																																					
6.2.6 Sensible Gain due to Air Leakage																																													
$HG_{salb} = LR_{aire} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$																																													
$= 0.137 \times 441.15 \times 7 \times 1.2 = 514 \text{ W}$																																													
$= 31030 \text{ Btu/h}$																																													
6.2.7 Sensible heat Gain due to Ventilation																																													
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																													
$155 \text{ CFM} \times 13 \text{ °F} \times 1.08 \times 0.25 = 536 \text{ Btu/h}$																																													
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																													
$HL_{airr} = Level \text{ Factor} \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclvl} + HL_{bgclvl})\}$																																													
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HLclvl)</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HLclvl)</th> </tr> <tr> <td>1</td> <td>0.5</td> <td rowspan="5">31,030</td> <td>10,427</td> <td>1.488</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>17,829</td> <td>0.522</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>17,917</td> <td>0.346</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)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HLclvl)	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLclvl)	1	0.5	31,030	10,427	1.488	2	0.3	17,829	0.522	3	0.2	17,917	0.346	4	0	0	0.000	5	0	0	0.000										
Level	Level Factor (LF)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HLclvl)	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLclvl)																																									
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5	0		0	0.000																																									
*HLairbv = Air leakage heat loss + ventilation heat loss **For a balanced or supply only ventilation system HLairrv = 0																																													

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5003 - THE OAKGROVE	WOB	BUILDER: GOLD PARK HOMES
SFQT: 3862	LO# 80241	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):	56085.0	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: 61.0 ft	WIDTH: 40.0 ft	EXPOSED PERIMETER:	152.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	50.0 ft

2012 OBC - COMPLIANCE PACKAGE

Component	Compliance Package A1	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20 ci	21.12
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value	-	-
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13
Windows and Sliding Glass Doors Maximum U-Value	0.28	-
Skylights Maximum U-Value	0.49	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

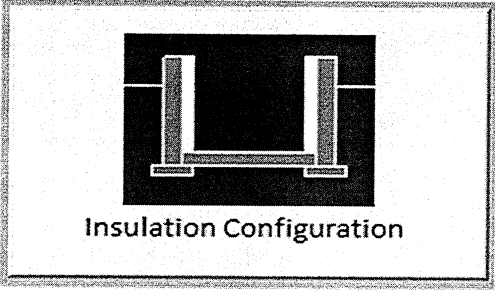
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

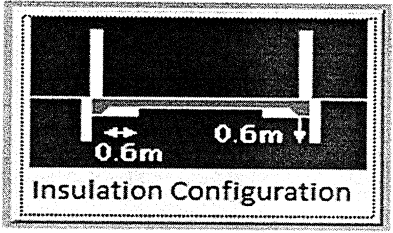
Weather Station Description		
Province:	Ontario	
Region:	Vaughan (Woodbridge)	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	4.6	 Insulation Configuration
Floor Width (m):	12.2	
Exposed Perimeter (m):	46.3	
Wall Height (m):	3.0	
Depth Below Grade (m):	1.83	
Window Area (m ²):	0.8	
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):		814

TYPE: 5003 - THE OAKGROVE
LO# 80241

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):	12.2	
Exposed Perimeter (m):	15.2	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		204

TYPE: 5003 - THE OAKGROVE
LO# 80241

WOB

Air Infiltration Residential Load Calculator

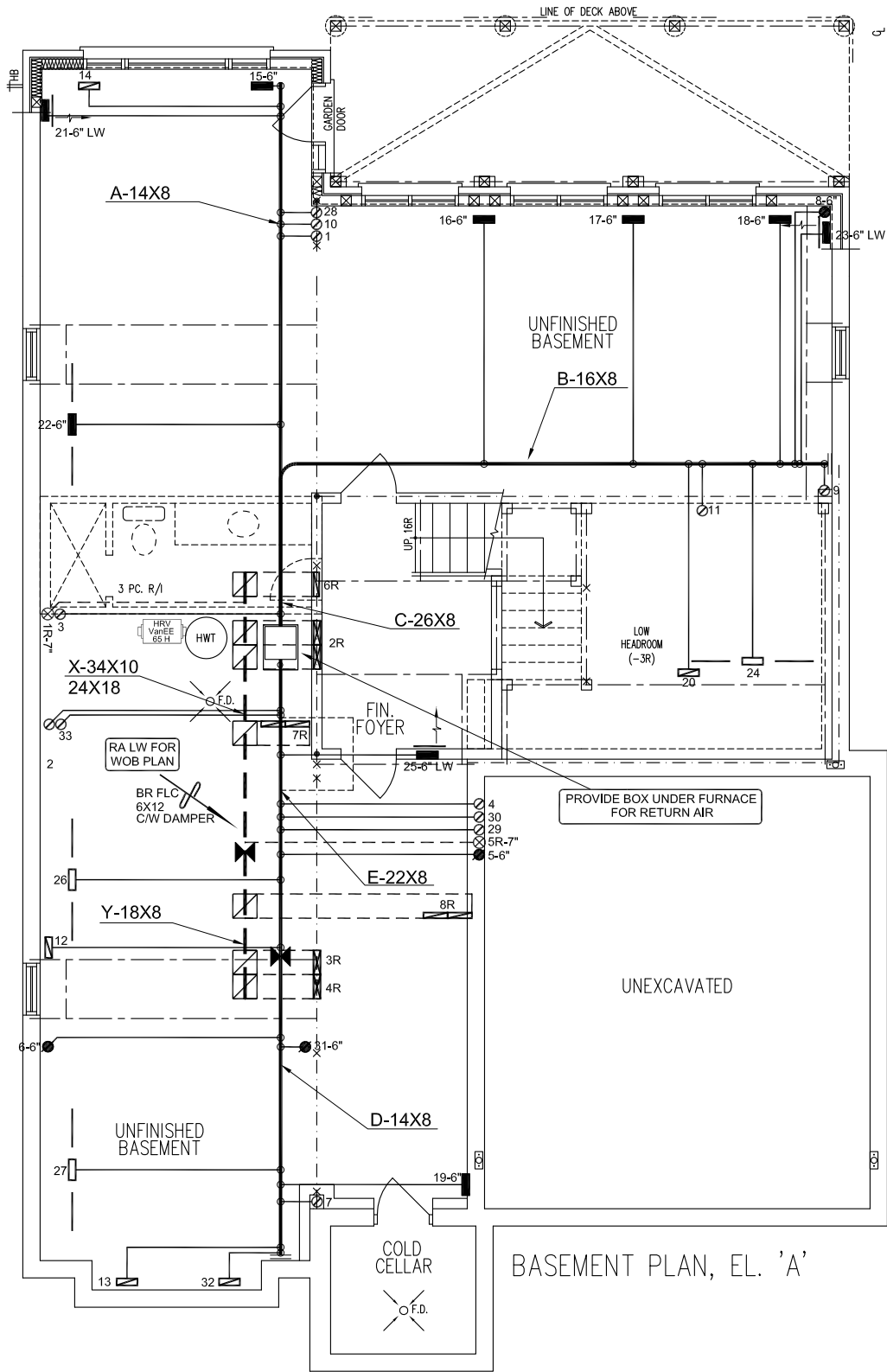
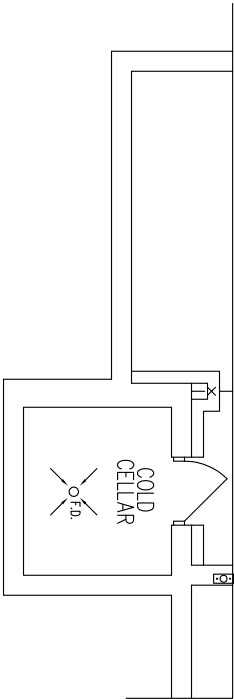
Supplemental tool for CAN/CSA-F280

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):	1588.2			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	2117.1 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			

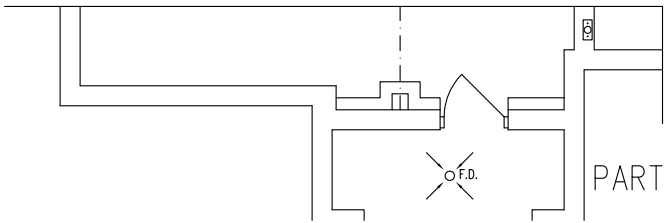
TYPE: 5003 - THE OAKGROVE
LO# 80241

WOB

PART. BASEMENT PLAN, EL. 'B'



BASEMENT PLAN, EL. 'A'



PART. BASEMENT PLAN, EL. 'C'

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

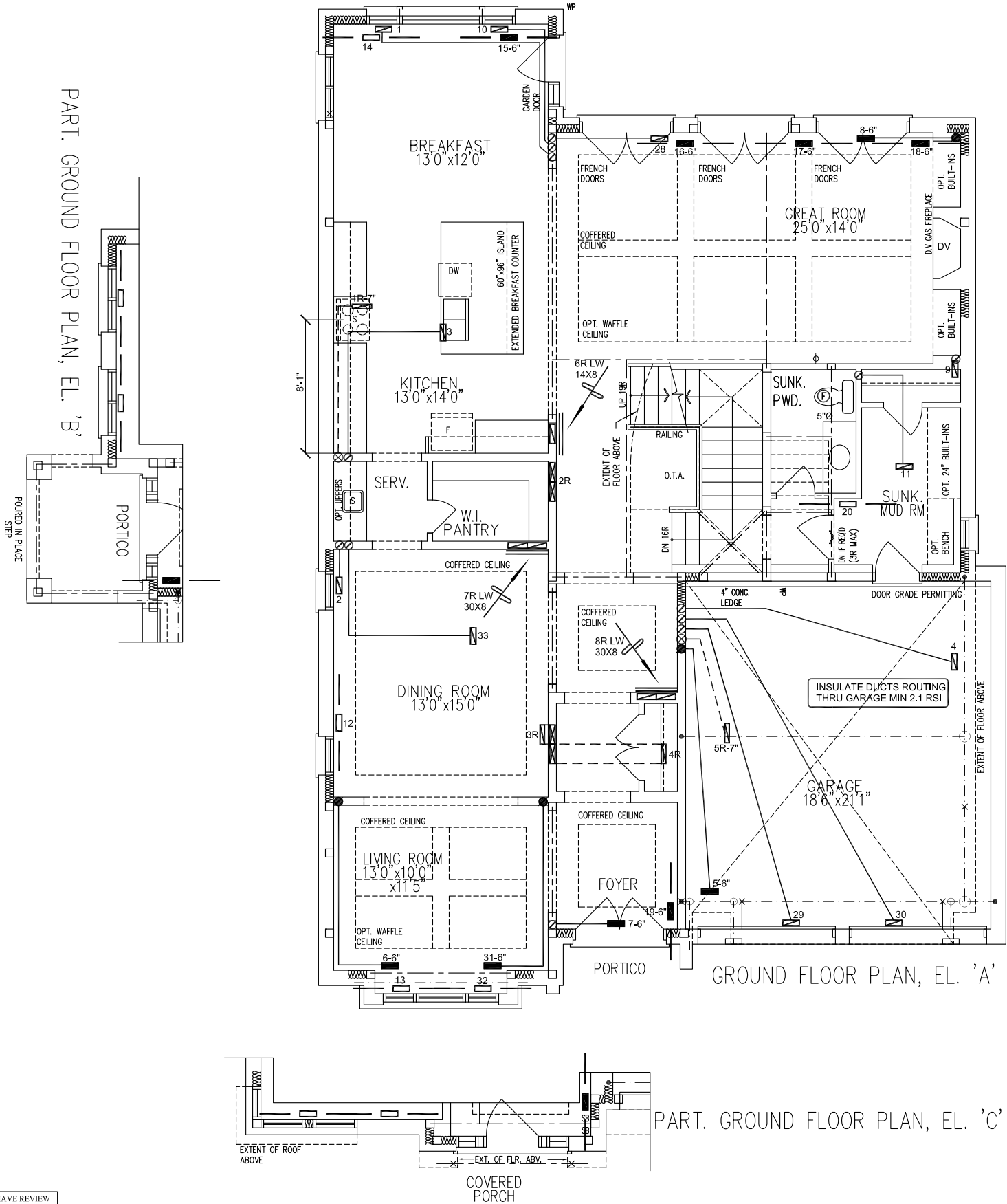
WOB

PACKAGE A1

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	FEB/2020
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	DECK CONDITIONS ADDED	OCT/2018
	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 81774 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title	
GOLD PARK HOMES	Project Name PINE VALLEY & TESTON VAUGHAN, ONTARIO		MAKE	LENNOX	3RD FLOOR				BASEMENT HEATING LAYOUT	
MODEL			EL296UH110XE60C	2ND FLOOR	16	5	4			
INPUT			110 MBTU/H	1ST FLOOR	10	3	2			
OUTPUT			106 MBTU/H	BASEMENT	7	1	0	Date	OCT/2018	
THE OAKGROVE - WOB 5003 3862 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.		COOLING	5.0 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	1955 cfm @ 0.6" w.c.					BCIN# 19669	LO# 80241



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

WOB

PACKAGE A1

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	FEB/2020
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	DECK CONDITIONS ADDED	OCT/2018
	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

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON VAUGHAN, ONTARIO

THE OAKGROVE - WOB

5003

3862 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

OCT/2018

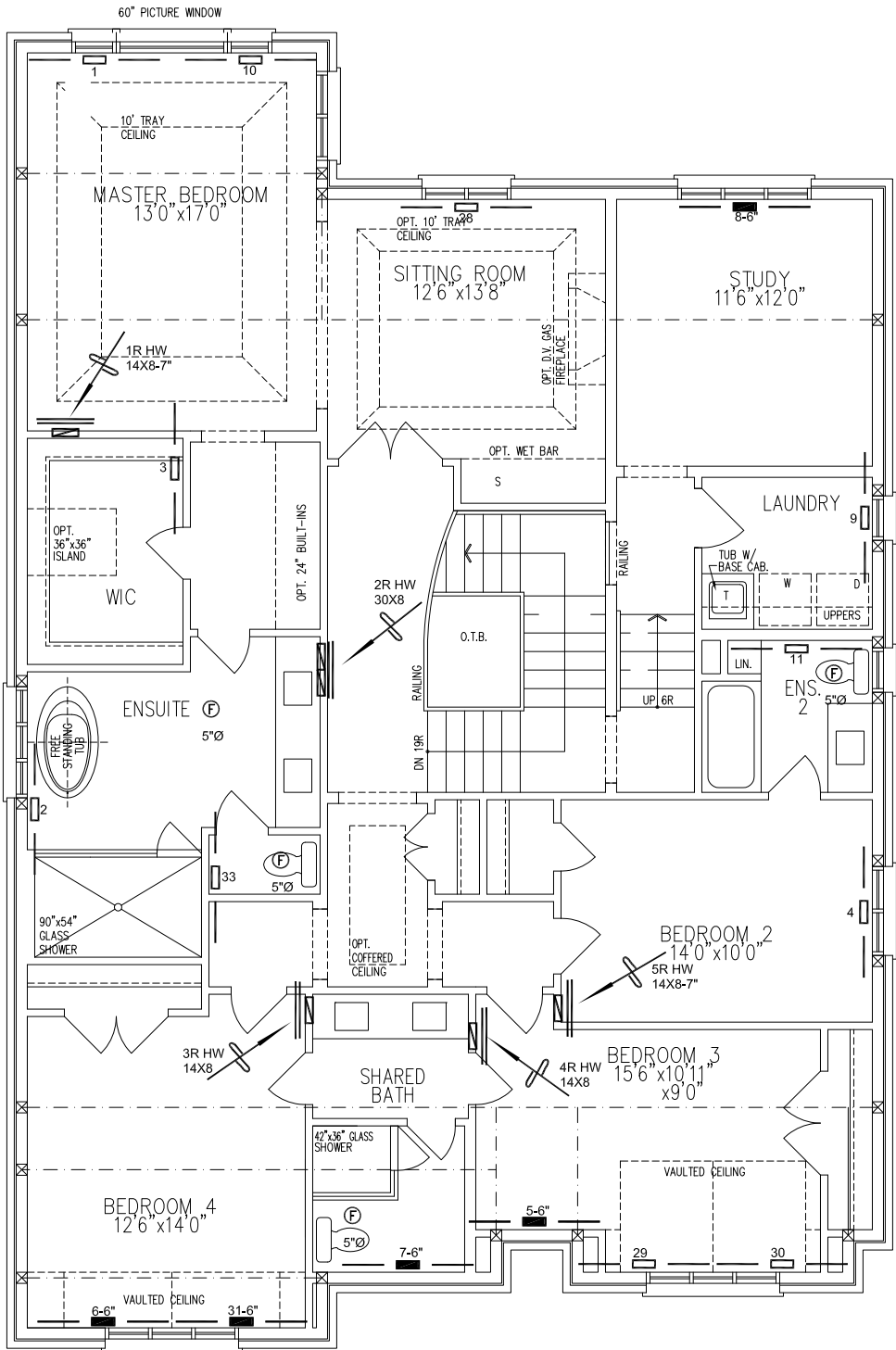
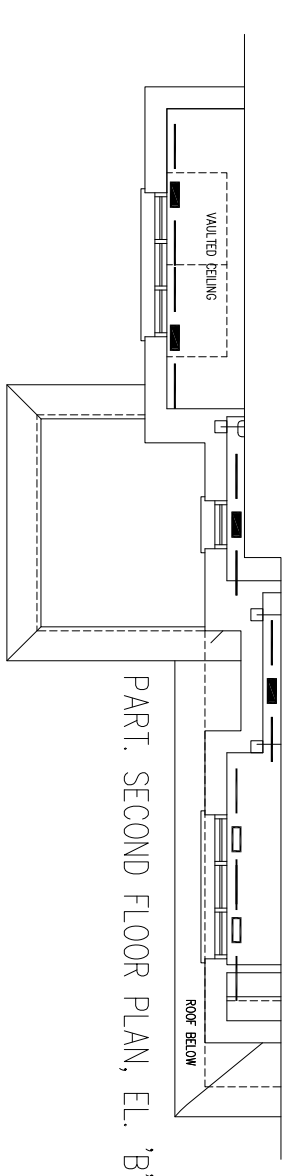
Scale

1/8" = 1'-0"

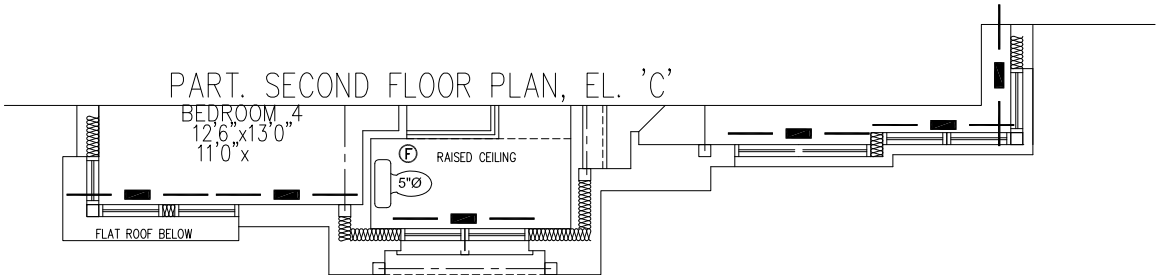
BCIN# 19669

LO#

80241



SECOND FLOOR 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

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	FEB/2020
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	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		 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			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	OCT/2018
PINE VALLEY & TESTON VAUGHAN, ONTARIO			Scale	1/8" = 1'-0"
THE OAKGROVE - WOB			BCIN# 19669	
5003	3862 sqft		LO#	80241