Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information

Building number, street name			Unit no.	Lot/con.
Municipality	**Postal code**	**Plan number/ other description**		
VAUGHAN (WOODBRIDGE)				

B. Individual who reviews and takes responsibility for design activities

Name		Firm		
MICHAEL O'ROURKE		**HVAC DESIGNS LTD.**		
Street address			**Unit no.**	**Lot/con.**
375 FINLEY AVE			**202**	**N/A**
Municipality	**Postal code**	**Province**	**E-mail**	
AJAX	**L1S 2E2**	**ONTARIO**	**info@hvacdesigns.ca**	
Telephone number	**Fax number**		**Cell number**	
(905) 619-2300	**(905) 619-2375**		( )	

C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]

☐ House	☒ HVAC – House	☐ Building Structural
☐ Small Buildings	☐ Building Services	☐ Plumbing – House
☐ Large Buildings	☐ Detection, Lighting and Power	☐ Plumbing – All Buildings
☐ Complex Buildings	☐ Fire Protection	☐ On-site Sewage Systems

Description of designer's work	
HEAT LOSS / GAIN CALCULATIONS **DUCT SIZING** **RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY** **RESIDENTIAL SYSTEM DESIGN per CSA-F280-12**	**Model:** 3103 END 2 - OPT 4-BED **Project:** PINE VALLEY DRIVE

D. Declaration of Designer

I **MICHAEL O'ROURKE** declare that (choose one as appropriate):
(print name)

☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4.of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: _____
Firm BCIN: _____

☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5.of Di vision C, of the Building Code.

Individual BCIN: 19669
Basis for exemption from registration and qualification: O.B.C SENTENCE 3.2.4.1 (4)

☐ The design work is exempt from the registration and qualification requirements of the Building Code.
Basis for exemption from registration and qualification: _____

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. I have submitted this application with the knowledge and consent of the firm.

May 3, 2021
Date

Michael O'Rourke
Signature of Designer

NOTE:

1. For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d).of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
2. Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

HVAC DESIGNS LTD.

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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: PINE VALLEY DRIVE | END 2 - OPT 4-BED | DATE: May-21 | WINTER NATURAL AIR CHANGE RATE 0.336 | HEAT LOSS ΔT °F. 76 | CSA-F280-12

BUILDER: GOLD PARK HOMES | TYPE: 3103 | GFA: 2203 | LO# 90629 | SUMMER NATURAL AIR CHANGE RATE 0.109 | HEAT GAIN ΔT °F. 13 | SB-12 PACKAGE A1

ROOM USE			BED-4			ENS				BED-2			BED-3			MBR			ENS-4			LAUN				BATH			B-BTH			
EXP. WALL			13			6				31			25			29			0			11				6			8			
CLG. HT.			9			9				9			9			9			9			9				9			9			
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	117			54				279			225			261			0			99				54			60			
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN	
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	0	0	0	0	0	
EAST	21.3	41.6	16	340	665	13	277	540		0	0	0	0	0	0	32	681	1330	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	18	383	448	0	0	0	7	149	174		0	0	0	0	0	0	
WEST	21.3	41.6	0	0	0	0	0	0		34	724	1413	48	1021	1994	0	0	0	0	0	0	0	0	0		19	404	789	0	0	0	
SKYLT.	37.2	101.5	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	
DOORS	25.2	4.3	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	
NET EXPOSED WALL	4.5	0.8	101	451	76	41	183	31		245	1093	184	177	790	133	211	942	159	0	0	0	92	411	69		35	156	26	0	0	0	
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.6	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	12	43	7	
EXPOSED CLG	1.3	0.6	156	200	92	102	131	60		161	207	95	227	291	133	204	262	120	156	200	92	209	268	123		78	100	46	0	0	0	
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0		21	58	26	33	91	42	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		182	464	78	0	0	0	0	0	0	0	0	0	209	533	90		78	199	34	0	0	0	
BASEMENT/CRAWL HEAT LOSS			0			0				0			0			0			0			0				0			216			
SLAB ON GRADE HEAT LOSS			0			0				0			0			0			0			0				0			0			
SUBTOTAL HT LOSS			991			591				2545			2193			2267			200			1361				860			260			
SUB TOTAL HT GAIN					832			631				1796			2302			2056			92			456			895			7		
LEVEL FACTOR / MULTIPLIER			0.20	0.25		0.20	0.25			0.20	0.25		0.20	0.25		0.20	0.25		0.20	0.25		0.20	0.25			0.20	0.25		0.50	1.60		
AIR CHANGE HEAT LOSS				247			147				633			545			564			50			338				214			415			
AIR CHANGE HEAT GAIN					50			38				109			139			125			6			28			54			0		
DUCT LOSS				0			0				318			0			0			0			170				107			0			
DUCT GAIN					0			0				281			0			0			0			48			95			0		
HEAT GAIN PEOPLE	240		1		240	0		0		1		240	1		240	2		480	0		0	0		0		0		0	0		0	
HEAT GAIN APPLIANCES/LIGHTS					662			0				662			662			662			0			0			0			0		
TOTAL HT LOSS BTU/H				1238			737				3496			2739			2831			250			1869				1181			674		
TOTAL HT GAIN x 1.3 BTU/H					2320			870				4014			4347			4320			126			692				1358			10		

ROOM USE					K/D/G						FOY					BAS		
EXP. WALL					81						27					98		
CLG. HT.					11						13					9		
	FACTORS																	
GRS.WALL AREA	LOSS	GAIN			891						351					735		
GLAZING						LOSS	GAIN					LOSS	GAIN				LOSS	GAIN
NORTH	21.3	16.0			0	0	0				0	0	0			0	0	0
EAST	21.3	41.6			99	2107	4114				0	0	0			8	170	332
SOUTH	21.3	24.9			48	1021	1195				0	0	0			8	170	199
WEST	21.3	41.6			0	0	0				21	447	873			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				44	1111	187			20	505	85
NET EXPOSED WALL	4.5	0.8			744	3320	559				286	1276	215			0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.6			0	0	0				0	0	0			147	529	89
EXPOSED CLG	1.3	0.6			0	0	0				0	0	0			0	0	0
NO ATTIC EXPOSED CLG	2.7	1.3			0	0	0				0	0	0			0	0	0
EXPOSED FLOOR	2.6	0.4			0	0	0				0	0	0			0	0	0
BASEMENT/CRAWL HEAT LOSS						0						0					2652	
SLAB ON GRADE HEAT LOSS						0						0						
SUBTOTAL HT LOSS						6448						2834					4026	
SUB TOTAL HT GAIN							5868						1275					706
LEVEL FACTOR / MULTIPLIER					0.30	0.44					0.30	0.44				0.50	1.60	
AIR CHANGE HEAT LOSS						2853						1254					6429	
AIR CHANGE HEAT GAIN							355						77					43
DUCT LOSS						0						0					0	
DUCT GAIN							0						0					0
HEAT GAIN PEOPLE	240				0		0				0		0			0		0
HEAT GAIN APPLIANCES/LIGHTS							662						0					662
TOTAL HT LOSS BTU/H						9301						4088					10456	
TOTAL HT GAIN x 1.3 BTU/H							8951						1757					1834

TOTAL HEAT GAIN BTU/H: 30874 TONS: 2.57 LOSS DUE TO VENTILATION LOAD BTU/H: 1631 STRUCTURAL HEAT LOSS: 38860 TOTAL COMBINED HEAT LOSS BTU/H: 40491

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

Michael O'Rourke.

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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SITE NAME: PINE VALLEY DRIVE
BUILDER: GOLD PARK HOMES

END 2 - OPT 4-BED
TYPE: 3103

DATE: May-21

GFA: 2203 LO# 90629

HEATING CFM	980	COOLING CFM	980
TOTAL HEAT LOSS	38,860	TOTAL HEAT GAIN	30,599
AIR FLOW RATE CFM	25.22	AIR FLOW RATE CFM	32.03

furnace pressure	0.6
furnace filter	0.05
a/c coil pressure	0.2
available pressure for s/a & r/a	0.35
plenum pressure s/a	0.18
max s/a dif press. loss	0.01
min adjusted pressure s/a	0.17
r/a pressure	0.17
r/a grille press. Loss	0.02
adjusted pressure r/a	0.15

$LENNOX
ML196UH045XE36B **45**

FAN SPEED	
LOW	620
MEDLOW	685
MEDIUM	980
MEDIUM HIGH	1110
HIGH	0

AFUE = 96 %
INPUT (BTU/H) = 44,000
OUTPUT (BTU/H) = **42,800**

DESIGN CFM = **980**
CFM @ .6 " E.S.P.

TEMPERATURE RISE 40 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	11	6	5
R/A	0	0	4	1	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	19	20	21	22	23	24
ROOM NAME	BED-4	MBR	BED-2	BED-2	BED-3	BED-3	LAUN	ENS-4	MBR	ENS	BATH	K/D/G	K/D/G	K/D/G	K/D/G	FOY	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.24	1.42	1.75	1.75	1.37	1.37	1.87	0.25	1.42	0.74	1.18	2.33	2.33	2.33	2.33	2.04	2.04	2.61	2.61	2.61	2.61
CFM PER RUN HEAT	31	36	44	44	35	35	47	6	36	19	30	59	59	59	59	52	52	66	66	66	66
RM GAIN MBH.	2.32	2.16	2.01	2.01	2.17	2.17	0.69	0.13	2.16	0.87	1.36	2.24	2.24	2.24	2.24	0.88	0.88	0.46	0.46	0.46	0.46
CFM PER RUN COOLING	74	69	64	64	70	70	22	4	69	28	43	72	72	72	72	28	28	15	15	15	15
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	48	54	61	55	59	53	42	36	46	38	50	18	26	37	42	35	28	26	49	35	41
EQUIVALENT LENGTH	150	130	140	120	150	150	160	160	130	150	160	110	140	160	130	140	150	120	140	150	120
TOTAL EFFECTIVE LENGTH	198	184	201	175	209	203	202	196	176	188	210	128	166	197	172	175	178	146	189	185	161
ADJUSTED PRESSURE	0.09	0.09	0.09	0.1	0.08	0.08	0.09	0.09	0.1	0.09	0.08	0.13	0.1	0.09	0.1	0.1	0.1	0.12	0.09	0.09	0.11
ROUND DUCT SIZE	**6**	5	5	5	**6**	**6**	5	4	5	4	5	5	5	5	5	5	5	5	5	5	5
HEATING VELOCITY (ft/min)	158	264	323	323	178	178	345	69	264	218	220	433	433	433	433	382	382	485	485	485	485
COOLING VELOCITY (ft/min)	377	507	470	470	357	357	162	46	507	321	316	529	529	529	529	206	206	110	110	110	110
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	B	A	A	B	C	C	A	B	B	B	B	D	B	A	A	C	C	D	A	A	C

RUN #	25
ROOM NAME	B-BTH
RM LOSS MBH.	0.67
CFM PER RUN HEAT	17
RM GAIN MBH.	0.01
CFM PER RUN COOLING	0
ADJUSTED PRESSURE	0.17
ACTUAL DUCT LGH.	16
EQUIVALENT LENGTH	100
TOTAL EFFECTIVE LENGTH	116
ADJUSTED PRESSURE	0.15
ROUND DUCT SIZE	4
HEATING VELOCITY (ft/min)	195
COOLING VELOCITY (ft/min)	0
OUTLET GRILL SIZE	3X10
TRUNK	D

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	377	0.09	9.4	10	x	8	679	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	602	0.08	11.6	16	x	8	677	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	240	0.08	8.2	8	x	8	540	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	984	0.08	13.9	22	x	8	805	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	0	0.00	0	0	x	8	0	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	x	8	0

RETURN AIR #	1	2	3	4	5											BR
	0	0	0	0	2@8"	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	75	190	85	75	420	0	0	0	0	0	0	0	0	0	0	135
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	44	42	55	57	42	1	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	245	165	195	250	185	0	0	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	289	207	250	307	227	1	1	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.05	0.07	0.06	0.05	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	6	7.8	6	6	10.5	0	0	0	0	0	0	0	0	0	0	6.3
INLET GRILL SIZE	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	24	14	14	30	0	0	0	0	0	0	0	0	0	0	14

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	980	0.05	15.7	28	x	8	630
TRUNK Y	425	0.05	11.5	16	x	8	478
TRUNK Z	0	0.05	0	0	x	8	0
DROP	980	0.05	15.7	24	x	10	588

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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TYPE: 3103 LO # 90629
SITE NAME: PINE VALLEY DRIVE END 2 - OPT 4-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	3	@ 10.6 cfm	31.8	cfm
Kitchen & Bathrooms	6	@ 10.6 cfm	63.6	cfm
Other Rooms	2	@ 10.6 cfm	21.2	cfm
Table 9.32.3.A.		TOTAL	159.0	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	159	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	79.5	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE V150H Location: BSMT

79.5 cfm [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
79.5 CFM	X	76 F	X	1.08	X	0.25

SUPPLEMENTAL FANS BY INSTALLING CONTRACTOR

Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-4	BY INSTALLING CONTRACTOR	50	✓	3.5
BATH	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE V150H

150 cfm high 35 cfm low

75 % Sensible Efficiency @ 32 deg F (0 deg C) [✓] HVI Approved

LOCATION OF INSTALLATION

Lot: Concession

Township Plan:

Address

Roll # Building Permit #

BUILDER: GOLD PARK HOMES

Name:

Address:

City:

Telephone #: Fax #:

INSTALLING CONTRACTOR

Name:

Address:

City:

Telephone #: Fax #:

DESIGNER CERTIFICATION

I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.

Name: HVAC Designs Ltd.

Signature: Michael O'Rourke.

HRAI # 001820

Date: May-21

I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

INDIVIDUAL BCIN: 19669 Michael O'Rourke. MICHAEL O'ROURKE

HVAC DESIGNS LTD.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 90629 Model: 3103 Builder: GOLD PARK HOMES Date: 5/3/2021

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	891	9	8019
First	891	11	9801
Second	1346	9	12114
Third	0	9	0
Fourth	0	9	0
		Total:	29,934.0 ft³
		Total:	847.6 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.336
SUMMER NATURAL AIR CHANGE RATE	0.109

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-20	42	76
Summer DTDc	24	31	7	13

5.2.3.1 Heat Loss due to Air Leakage

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

0.336 x 235.45 x 42 °C x 1.2 = 4012 W

= **13688 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.109 x 235.45 x 7 °C x 1.2 = 220 W

= **750 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

80 CFM x 76 °F x 1.08 x 0.25 = **1631 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

80 CFM x 13 °F x 1.08 x 0.25 = **275 Btu/h**

5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)

$$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$$

Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL_{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)
1	0.5	13,688	4,286	1.597
2	0.3		9,283	0.442
3	0.2		11,009	0.249
4	0		0	0.000
5	0		0	0.000

*HLairbv = Air leakage heat loss + ventilation heat loss
*For a balanced or supply only ventilation system HLairve = 0

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 3103 END 2 - OPT 4-BED **BUILDER:** GOLD PARK HOMES
SFQT: 2203 **LO#** 90629 **SITE:** PINE VALLEY DRIVE

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:	ATTACHED	# 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):	29934.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.5 ft
LENGTH: 43.0 ft	WIDTH: 32.0 ft	EXPOSED PERIMETER:	106.0 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	96%	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

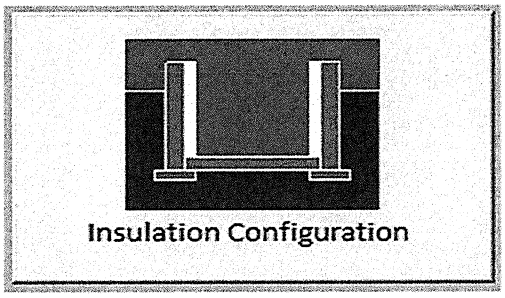
INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

Michael O'Rourke

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Vaughan (Woodbridge)	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	**13.1**	 Insulation Configuration
Floor Width (m):	**9.8**	
Exposed Perimeter (m):	**32.3**	
Wall Height (m):	**2.7**	
Depth Below Grade (m):	**2.29**	
Window Area (m^2):	**1.5**	
Door Area (m^2):	**1.9**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):	**840**	

TYPE: 3103 END 2 - OPT 4-BED
LO# 90629

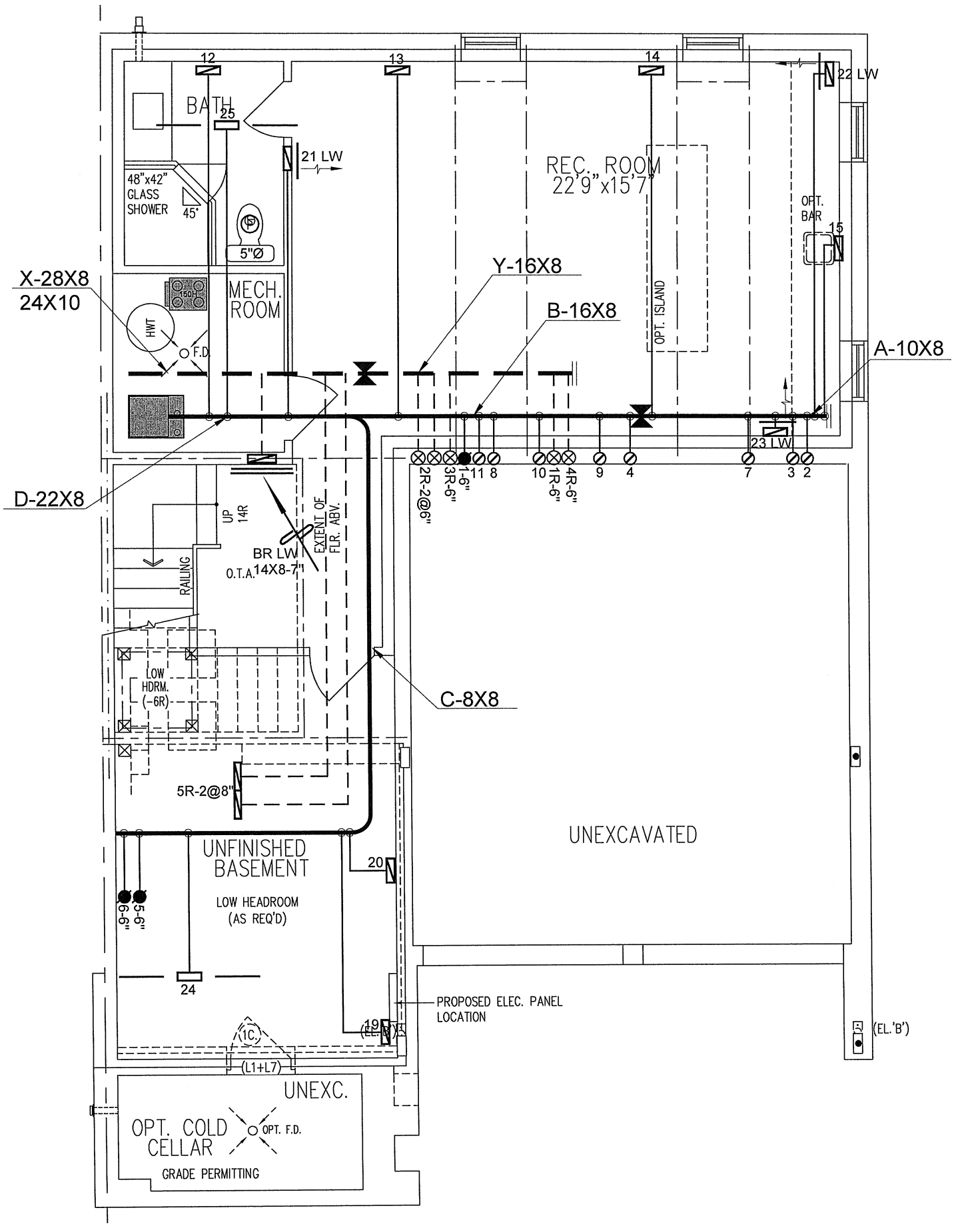
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Vaughan (Woodbridge)
Weather Station Location:	Open flat terrain, grass
Anemometer height (m):	10
Local Shielding	
Building Site:	Suburban, forest
Walls:	Heavy
Flue:	Heavy
Highest Ceiling Height (m):	6.55
Building Configuration	
Type:	Semi
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	847.6
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 1129.9 cm^2
	3.57 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 37.5 / Total Exhaust 37.5
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.336**
Cooling Air Leakage Rate (ACH/H):	**0.109**

TYPE: 3103 END 2 - OPT 4-BED
LO# 90629



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.

BASEMENT PLAN, ELEV. 'A' & 'B'

CSA-F280-12
PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
— ▭ —	SUPPLY AIR GRILLE	▬	6" SUPPLY AIR BOOT ABOVE	▱	14"x8" RETURN AIR GRILLE	▱	RETURN AIR STACK ABOVE
— ▬ —	SUPPLY AIR GRILLE 6" BOOT	⊘	SUPPLY AIR STACK FROM 2nd FLOOR	▱▱	30"x8" RETURN AIR GRILLE	⊠	RETURN AIR STACK 2nd FLOOR
▱	SUPPLY AIR BOOT ABOVE	●	6" SUPPLY AIR STACK 2nd FLOOR	▤	FRA- FLOOR RETURN AIR GRILLE	⧗	REDUCER

No.	Description	Date
3.		
2.		
1.		

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY DRIVE
VAUGHAN, ONTARIO

OPT 4-BED
3103 - END 2 2203 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
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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.

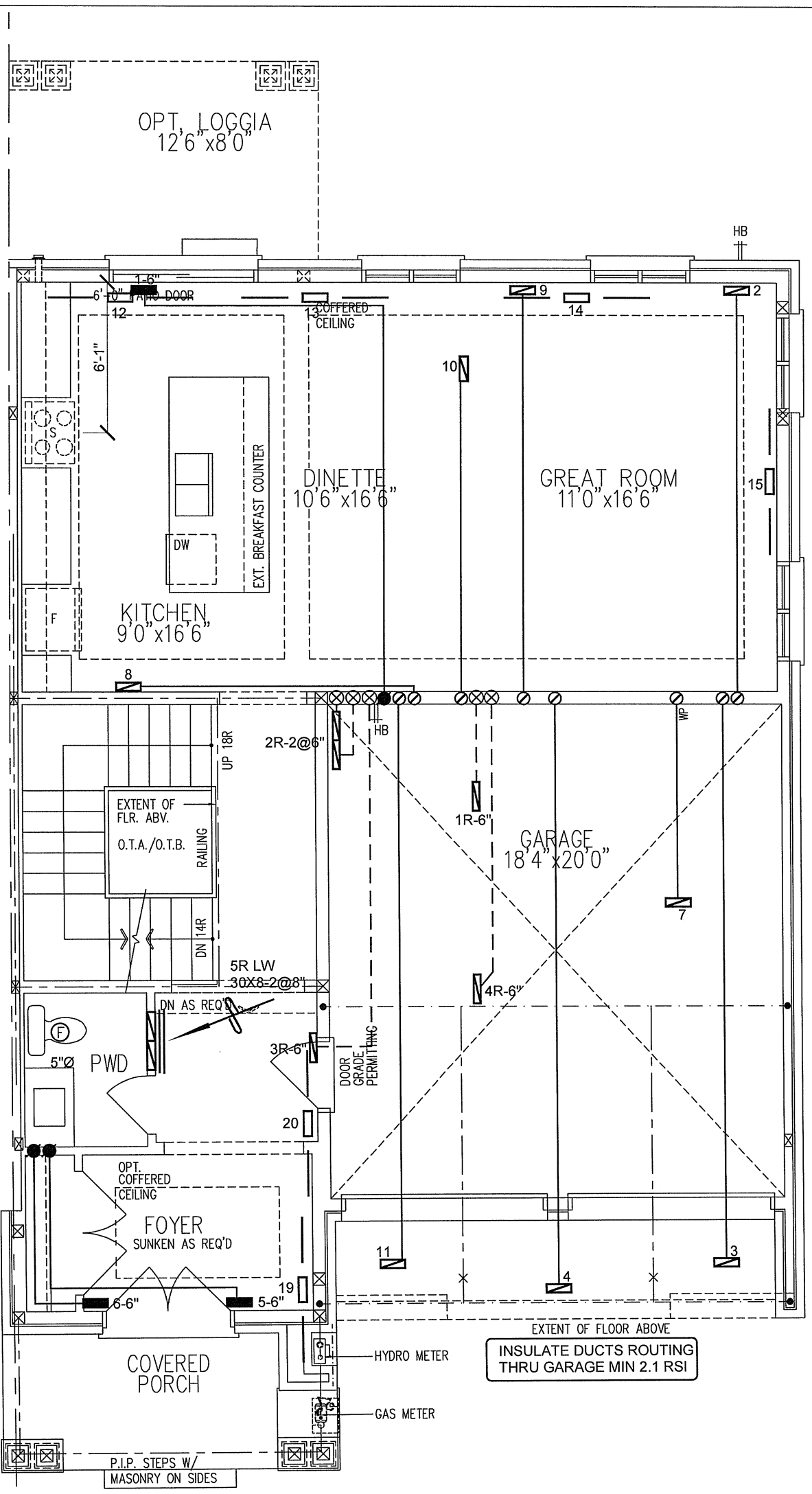
HEAT LOSS 40491 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	ML196UH045XE36B
INPUT	44 MBTU/H
OUTPUT	42.8 MBTU/H
COOLING	2.5 TONS
FAN SPEED	980 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	11	4	4
1ST FLOOR	6	1	2
BASEMENT	5	1	1

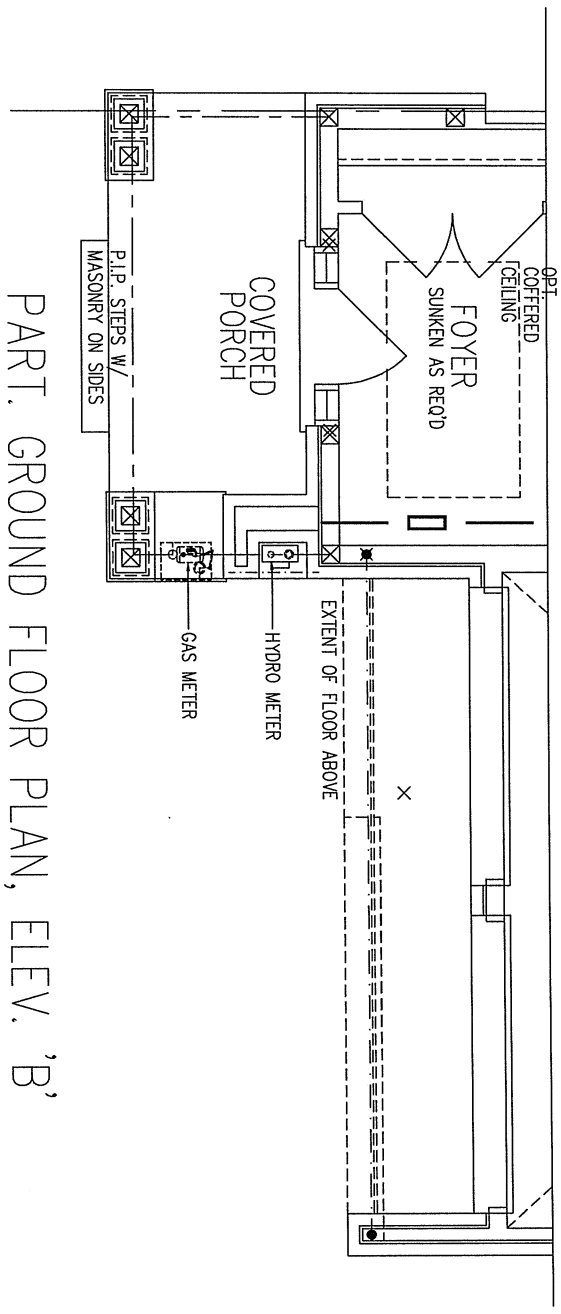
ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

Sheet Title
BASEMENT HEATING LAYOUT

Date APR/2021
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 90629



PART. GROUND FLOOR PLAN, ELEV. 'B'



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

GROUND FLOOR PLAN, ELEV. 'A'

CSA-F280-12

PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
— ▭ —	SUPPLY AIR GRILLE	▬	6" SUPPLY AIR BOOT ABOVE	▭	14"x8" RETURN AIR GRILLE	▭	RETURN AIR STACK ABOVE
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▭	SUPPLY AIR BOOT ABOVE	●	6" SUPPLY AIR STACK 2nd FLOOR	▭	FRA- FLOOR RETURN AIR GRILLE	⧗	REDUCER

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Client
GOLD PARK HOMES

Project Name
PINE VALLEY DRIVE
VAUGHAN, ONTARIO

OPT 4-BED
3103 - END 2 2203 sqft

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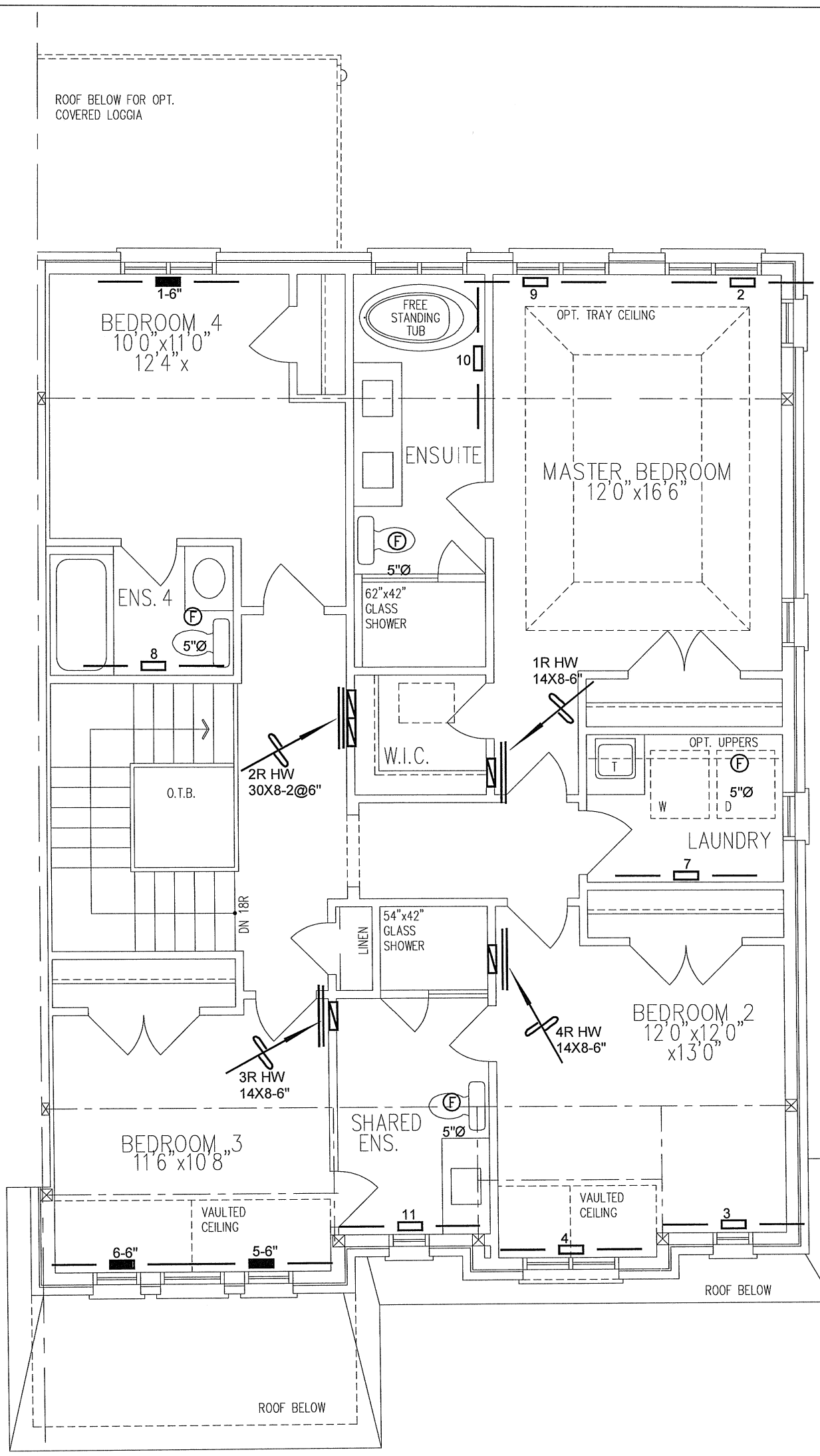
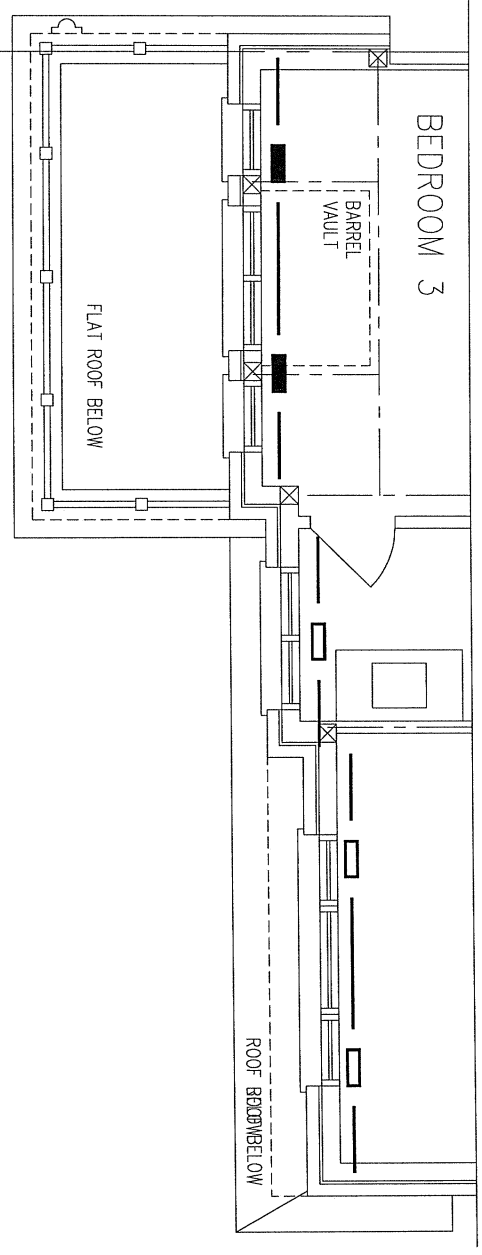
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date APR/2021
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 90629



PART. SECOND FLOOR PLAN, ELEV. 'B'



4-BEDROOM
IS STANDARD

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

OPT. 4-BEDROOM FLOOR PLAN, ELEV. 'A'
(ELEV. 'B' SIMILAR)

CSA-F280-12

PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
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Sheet Title
SECOND FLOOR
HEATING
LAYOUT

Date APR/2021
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 90629