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:** 4002 - VALLEYVIEW WOB **Project:** PINE VALLEY PH 2

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.

April 14, 2022
Date

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.

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

SITE NAME: PINE VALLEY PH 2 | WOB | DATE: Apr-22 | WINTER NATURAL AIR CHANGE RATE 0.407 | HEAT LOSS ΔT °F. 76 | CSA-F280-12

BUILDER: GOLD PARK HOMES | TYPE: 4002 - VALLEYVIEW | GFA: 3179 | LO# 96119 | SUMMER NATURAL AIR CHANGE RATE 0.137 | HEAT GAIN ΔT °F. 13 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS			WIC			BED-4			BED-3			BED-2			ENS-3/4					ENS-2				
EXP. WALL			40			27			17			38			32			13			7					6				
CLG. HT.			9			9			9			10			9			9			9					9				
	FACTORS																													
GRS.WALL AREA	LOSS	GAIN	360			243			153			380			288			117			63					54				
GLAZING				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	18	383	288	0	0	0			8	170	128		
EAST	21.3	41.6	0	0	0	0	0	0	0	0	0	44	936	1828	50	1064	2078	0	0	0	24	511	997			0	0	0		
SOUTH	21.3	24.9	0	0	0	14	298	349	9	192	224	9	192	224	0	0	0	0	0	0	0	0	0			0	0	0		
WEST	21.3	41.6	36	766	1496	20	426	831	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0		
SKYLT.	37.2	101.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0		
DOORS	20.1	3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0		
NET EXPOSED WALL	4.5	0.8	324	1446	244	209	933	157	144	643	108	327	1459	246	238	1062	179	99	442	74	39	174	29			46	205	35		
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		
EXPOSED CLG	1.3	0.6	348	447	204	180	231	106	195	250	115	266	341	156	245	314	144	240	308	141	118	151	69			55	71	32		
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0	0	40	110	50	20	55	25	0	0	0	0	0	0			0	0	0		
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	20	51	9	213	543	91	0	0	0	118	301	51			0	0	0		
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0					0				
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0					0				
SUBTOTAL HT LOSS				2659			1887			1084			3089			3039			1133			1137					446				
SUB TOTAL HT GAIN					1944			1442			447			2513			2517			503			1147					195			
LEVEL FACTOR / MULTIPLIER			0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35				0.20	0.35			
AIR CHANGE HEAT LOSS				937			665			382			1089			1071			399			401					157				
AIR CHANGE HEAT GAIN					144			106			33			186			186			37			85					14			
DUCT LOSS				0			0			0			418			411			0			154					0				
DUCT GAIN					0			0			0			397			397			0			123					0			
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0			0		0			
HEAT GAIN APPLIANCES/LIGHTS					1031			0			0			1031			1031			1031			0					0			
TOTAL HT LOSS BTU/H				3595			2552			1466			4596			4520			1532			1692					603				
TOTAL HT GAIN x 1.3 BTU/H					4677			2014			624			5677			5682			2354			1761					272			

ROOM USE			DIN				KT/GT				LAUN			PWD			FOY					WOB			BAS		
EXP. WALL			14				95				22			6			40					40			140		
CLG. HT.			11				11				13			11			11					10			10		
	FACTORS																										
GRS.WALL AREA	LOSS	GAIN	154				1045				286			66			440					400			1400		
GLAZING				LOSS	GAIN			LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN				LOSS	GAIN		LOSS	GAIN
NORTH	21.3	16.0	26	553	415		0	0	0		10	213	160	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	28	596	1163			0	0	0	0	0	0
SOUTH	21.3	24.9	0	0	0		24	511	598		0	0	0	10	213	249	0	0	0			0	0	0	6	128	149
WEST	21.3	41.6	0	0	0		117	2490	4862		0	0	0	0	0	0	0	0	0			75	1596	3116	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
DOORS	20.1	3.4	0	0	0		0	0	0		20	401	68	0	0	0	15	301	51			0	0	0	40	802	135
NET EXPOSED WALL	4.5	0.8	128	571	96		904	4034	679		256	1142	192	56	250	42	397	1772	298			325	1450	244	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
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
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0		10	27	13		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
BASEMENT/CRAWL HEAT LOSS				0				0				0			0			0							2307	
SLAB ON GRADE HEAT LOSS				0				0				0			0			0					499			
SUBTOTAL HT LOSS				1125				7062				1756			463			2668					3545		3237	
SUB TOTAL HT GAIN					512				6151				420			291			1513					3361			284
LEVEL FACTOR / MULTIPLIER			0.30	0.59			0.30	0.59			0.30	0.59		0.30	0.59		0.30	0.59							0.50	1.88	
AIR CHANGE HEAT LOSS				658				4132				1028			271			1561								12750	
AIR CHANGE HEAT GAIN					38				454				31			21			112								269
DUCT LOSS				0				0				0			0			0							0		
DUCT GAIN					0				0				0			0			0								0
HEAT GAIN PEOPLE	240		0		0		0		0		0		0	0		0	0		0			0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					1031				1031				1031			0			1031					0			1031
TOTAL HT LOSS BTU/H				1782				11194				2784			733			4230					3545		15986	
TOTAL HT GAIN x 1.3 BTU/H					2054				9927				1926			406			3451					4369			2060

TOTAL HEAT GAIN BTU/H: 47528 TONS: 3.96 LOSS DUE TO VENTILATION LOAD BTU/H: 1631 STRUCTURAL HEAT LOSS: 60813 TOTAL COMBINED HEAT LOSS BTU/H: 62444

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

HVAC DESIGNS LTD.

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SITE NAME: PINE VALLEY PH 2 — WOB
BUILDER: GOLD PARK HOMES — TYPE: 4002 - VALLEYVIEW — DATE: Apr-22 — GFA: 3179 — LO# 96119

HEATING CFM	1515		COOLING CFM	1515			furnace pressure	0.6																
TOTAL HEAT LOSS	60,813		TOTAL HEAT GAIN	47,253			furnace filter	0.05																
AIR FLOW RATE CFM	24.91		AIR FLOW RATE CFM	32.06			a/c coil pressure	0.2																
							available pressure																	
							for s/a & r/a	0.35																
							plenum pressure s/a	0.18			r/a pressure	0.17												
							max s/a dif press. loss	0.03			r/a grille press. Loss	0.02												
							min adjusted pressure s/a	0.15			adjusted pressure r/a	0.15												

$*LENNOX — AFUE = 96 %
ML196UH070XE48B 70 — INPUT (BTU/H) = 66,000
FAN SPEED — OUTPUT (BTU/H) = 63,900
LOW 0
MEDLOW 1070 — DESIGN CFM = 1515
MEDIUM 1270 — CFM @ .6 " E.S.P.
MEDIUM HIGH 1515
HIGH 1595 — TEMPERATURE RISE 39 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	12	8	6
R/A	0	0	5	2	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-4	BED-3	BED-2	ENS-3/4	ENS-3/4	BED-4	MBR	ENS-2	DIN	KT/GT	KT/GT	KT/GT	KT/GT	LAUN	PWD	FOY	BED-3	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.80	2.55	1.47	2.30	2.26	1.53	0.85	0.85	2.30	1.80	0.60	1.78	2.80	2.80	2.80	2.80	2.78	0.73	4.23	2.26	3.26	3.26	3.26	3.26
CFM PER RUN HEAT	45	64	37	57	56	38	21	21	57	45	15	44	70	70	70	70	69	18	105	56	81	81	81	81
RM GAIN MBH.	2.34	2.01	0.62	2.84	2.84	2.35	0.88	0.88	2.84	2.34	0.27	2.05	2.48	2.48	2.48	2.48	1.93	0.41	3.45	2.84	1.07	1.07	1.07	1.07
CFM PER RUN COOLING	75	65	20	91	91	75	28	28	91	75	9	66	80	80	80	80	62	13	111	91	34	34	34	34
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.15	0.16	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	50	58	58	61	51	38	48	40	49	35	47	10	41	48	40	30	11	48	44	57	62	38	26	28
EQUIVALENT LENGTH	210	150	150	180	170	180	140	140	190	120	180	130	130	130	150	130	200	210	140	160	150	170	130	150
TOTAL EFFECTIVE LENGTH	260	208	208	241	221	218	188	180	239	155	227	140	171	178	190	160	211	258	184	217	212	208	156	178
ADJUSTED PRESSURE	0.07	0.08	0.08	0.07	0.07	0.08	0.09	0.1	0.07	0.11	0.08	0.12	0.1	0.1	0.09	0.11	0.08	0.07	0.08	0.07	0.08	0.08	0.1	0.09
ROUND DUCT SIZE	6	5	4	6	6	6	4	4	6	6	4	6	5	5	5	5	5	4	6	6	6	6	6	6
HEATING VELOCITY (ft/min)	229	470	424	291	286	194	241	241	291	229	172	224	514	514	514	514	507	207	535	286	413	413	413	413
COOLING VELOCITY (ft/min)	382	477	229	464	464	382	321	321	464	382	103	337	587	587	587	587	455	149	566	464	173	173	173	173
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10
TRUNK	A	A	A	C	D	B	D	D	C	B	D	B	A	A	A	B	B	C	C	D	A	A	B	B

RUN #	25	26
ROOM NAME	BAS	BAS
RM LOSS MBH.	3.26	3.26
CFM PER RUN HEAT	81	81
RM GAIN MBH.	1.07	1.07
CFM PER RUN COOLING	34	34
ADJUSTED PRESSURE	0.16	0.16
ACTUAL DUCT LGH.	43	51
EQUIVALENT LENGTH	150	130
TOTAL EFFECTIVE LENGTH	193	181
ADJUSTED PRESSURE	0.08	0.09
ROUND DUCT SIZE	6	6
HEATING VELOCITY (ft/min)	413	413
COOLING VELOCITY (ft/min)	173	173
OUTLET GRILL SIZE	4X10	4X10
TRUNK	C	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	518	0.07	11.3	14	x	8	666	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	1027	0.07	14.6	24	x	8	770	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	318	0.07	9.4	10	x	8	572	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	487	0.07	11.1	16	x	8	548	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 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	1515	0.05	18.4	32	x	10	682
TRUNK Y	740	0.05	14.1	24	x	8	555
TRUNK Z	605	0.05	13.1	20	x	8	545
DROP	1515	0.05	18.4	24	x	14	649

RETURN AIR #	1	2	3	4	5	6	7									BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	135	130	140	140	130	430	175	0	0	0	0	0	0	0	0	235
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.	51	58	57	34	42	28	35	1	1	1	1	1	1	1	1	18
EQUIVALENT LENGTH	235	205	165	185	225	190	185	0	0	0	0	0	0	0	0	215
TOTAL EFFECTIVE LH	286	263	222	219	267	218	220	1	1	1	1	1	1	1	1	233
ADJUSTED PRESSURE	0.05	0.06	0.07	0.07	0.06	0.07	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.06
ROUND DUCT SIZE	7.5	7	6.9	6.9	7	10.6	7.5	0	0	0	0	0	0	0	0	8.8
INLET GRILL SIZE	8	8	8	8	8	8	8	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	14	14	14	14	30	14	0	0	0	0	0	0	0	0	30

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

HVAC DESIGNS LTD.

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Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

TYPE: 4002 - VALLEYVIEW LO # 96119
SITE NAME: PINE VALLEY PH 2 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	4	@ 10.6 cfm	42.4	cfm
Table 9.32.3.A.		TOTAL	169.6	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	169.6	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	90.1	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-3/4	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-2	BY INSTALLING CONTRACTOR	50	✓	3.5
PWD	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: April-22

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.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 96119 Model: 4002 - VALLEYVIEW Builder: GOLD PARK HOMES Date: 4/14/2022

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1449	10	14490
First	1449	11	15939
Second	1740	9	15660
Third	0	9	0
Fourth	0	9	0
		Total:	46,089.0 ft³
		Total:	1305.1 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	ΔT °F
Winter DTDh	22	-20	42	76
Summer DTDc	24	31	7	13

5.2.3.1 Heat Loss due to Air Leakage

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

0.407 x 362.53 x 42 °C x 1.2 = 7473 W

= **25500 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.137 x 362.53 x 7 °C x 1.2 = 422 W

= **1441 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	25,500	6,782	1.880
2	0.3		13,074	0.585
3	0.2		14,475	0.352
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

Michael O'Rourke
BCIN# 19669

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4002 - VALLEYVIEW WOB **BUILDER:** GOLD PARK HOMES
SFQT: 3179 **LO#** 96119 **SITE:** PINE VALLEY PH 2

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
		WINDOW SHGC	0.50

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):	46089.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	2.00	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 58.0 ft WIDTH:	32.0 ft	EXPOSED PERIMETER:	140.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	40.0 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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

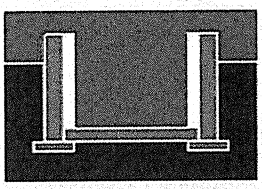
Michael O'Rourke

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):	**4.3**	 Insulation Configuration
Floor Width (m):	**9.8**	
Exposed Perimeter (m):	**42.7**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**1.78**	
Window Area (m^2):	**0.6**	
Door Area (m^2):	**3.7**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):	**676**	

TYPE: 4002 - VALLEYVIEW WOB
LO# 96119

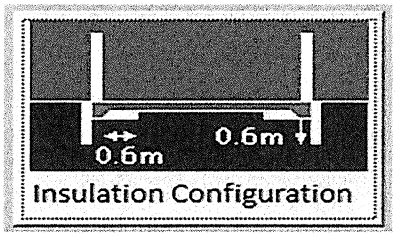
Michael O'Rourke BCIN #19669

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

Residential Slab on Grade Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Vaughan (Woodbridge)
Site Description	
Soil Conductivity:	Normal conductivity: dry sand, loam, clay
Water Table:	Normal (7-10 m, 23-33 ft)

Foundation Dimensions		
Length (m):	**1.2**	
Width (m):	**9.8**	
Exposed Perimeter (m):	**12.2**	

Insulation Configuration

Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Results		
Heating Load (Watts):	**146**	

TYPE: 4002 - VALLEYVIEW WOB
LO# 96119

Michael O'Rourke BCIN# 19669

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

Air Infiltration Residential Load Calculator

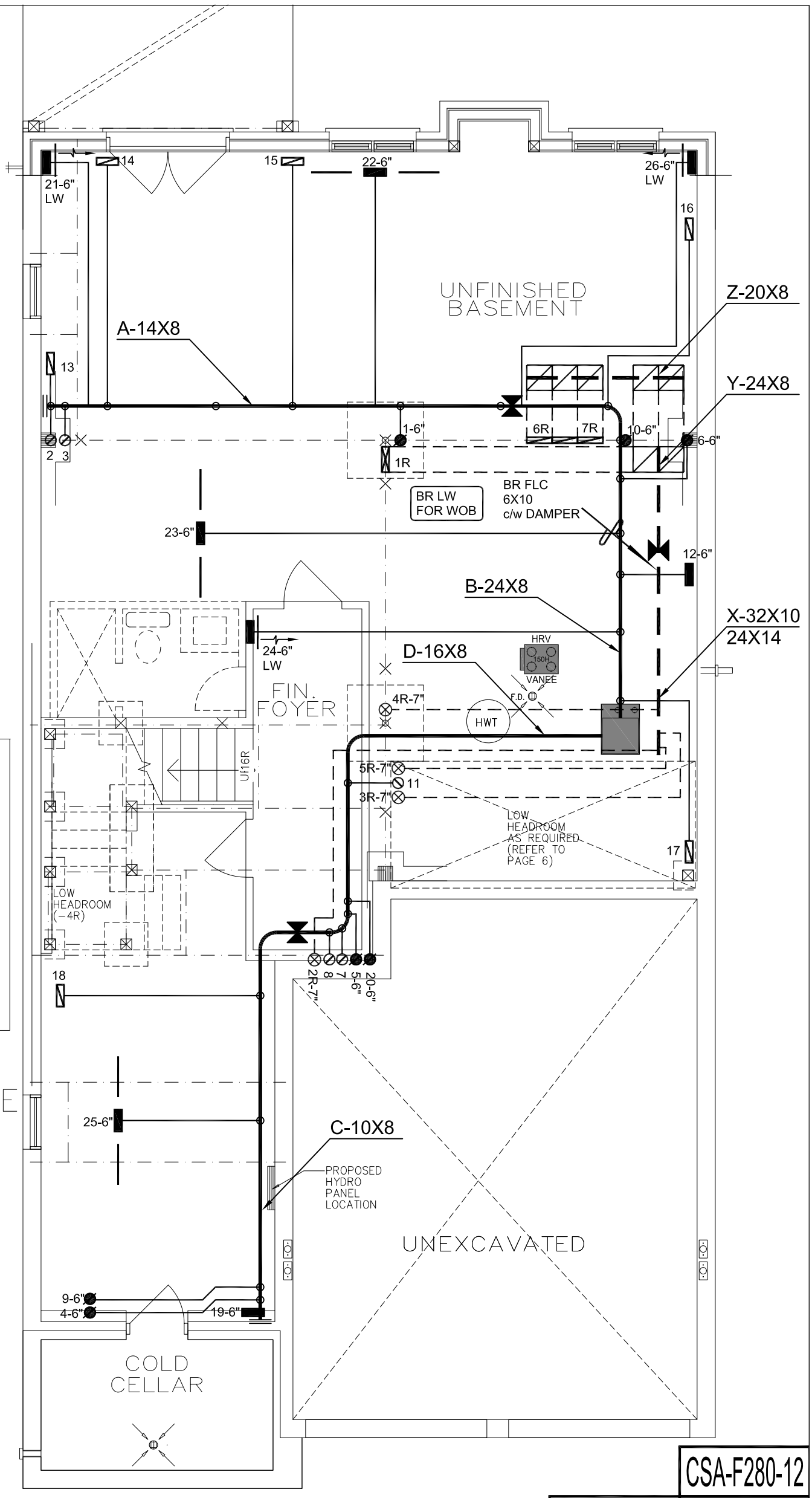
Supplemental tool for CAN/CSA-F280

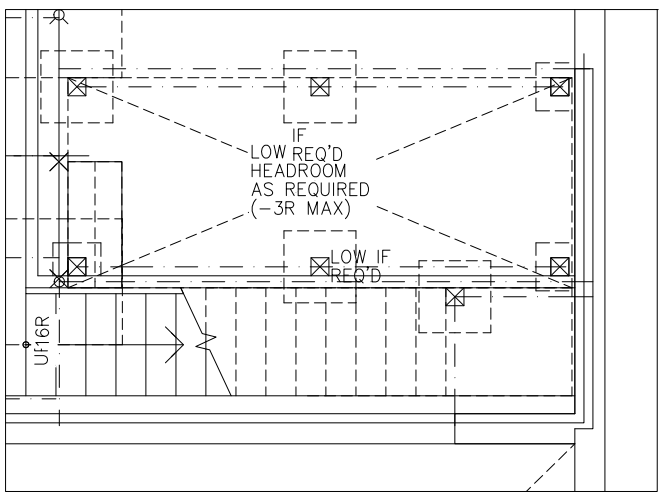
Weather Station Description	
Province:	Ontario
Region:	Vaughan (Woodbridge)
Weather Station Location:	Open flat terrain, grass
Anemometer height (m):	10
Local Shielding	
Building Site:	Suburban, forest
Walls:	Heavy
Flue:	Heavy
Highest Ceiling Height (m):	9.14
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	1305.1
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 1739.7 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):	**0.407**
Cooling Air Leakage Rate (ACH/H):	**0.137**

TYPE: 4002 - VALLEYVIEW WOB

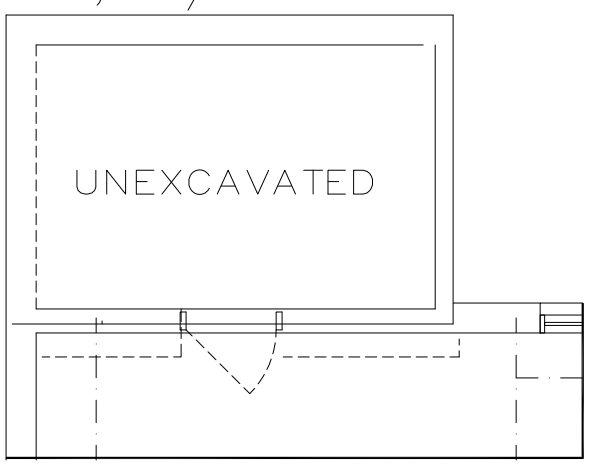
LO# 96119

Michael O'Rourke BCIN# 19669





PART. GROUND FLOOR
PLAN, W/ OPT. SERVICE



PART. BASEMENT
PLAN LOGGIA CONDITION

BASEMENT PLAN EL. 'A', 'B' & '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, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12

WOB | 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.		

REVISIONS

Client
GOLD PARK HOMES

Project Name
PINE VALLEY PH 2
VAUGHAN, ONTARIO
WOB
VALLEYVIEW
4002 3179 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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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.

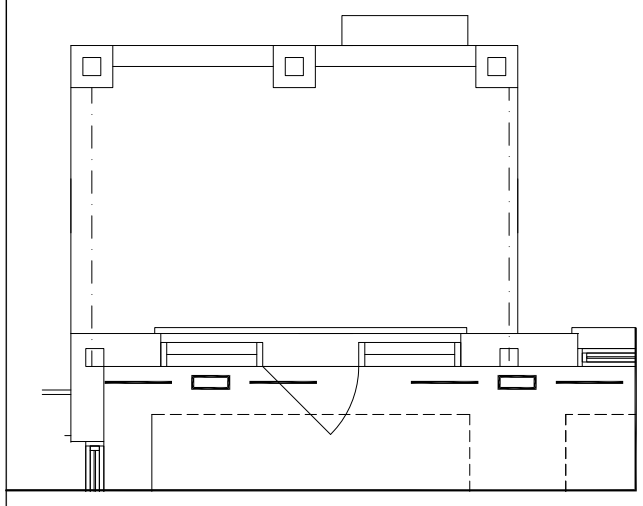
HEAT LOSS 62444 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	ML196070XE48B
INPUT	66 MBTU/H
OUTPUT	63.9 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1515 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	12	5	3
1ST FLOOR	8	2	2
BASEMENT	6	1	0

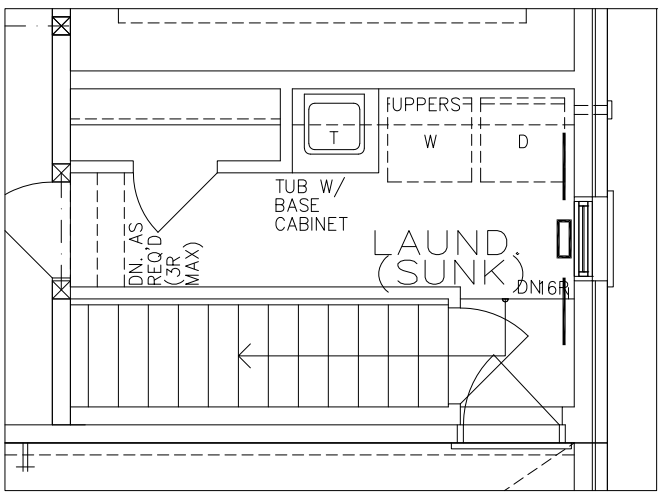
ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

Sheet Title
BASEMENT HEATING LAYOUT

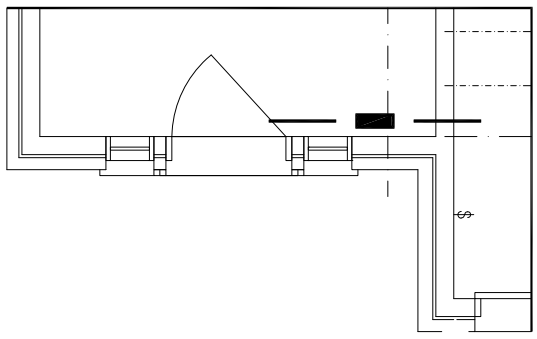
Date APR/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 96119



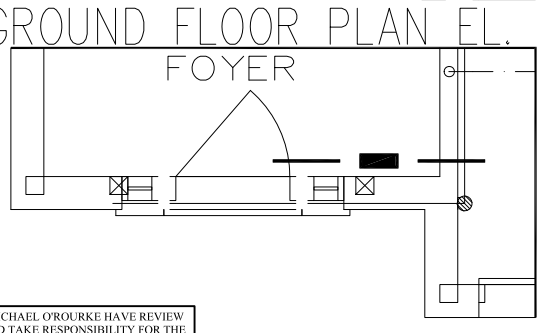
PART. GROUND FLOOR
LOGGIA CONDITION



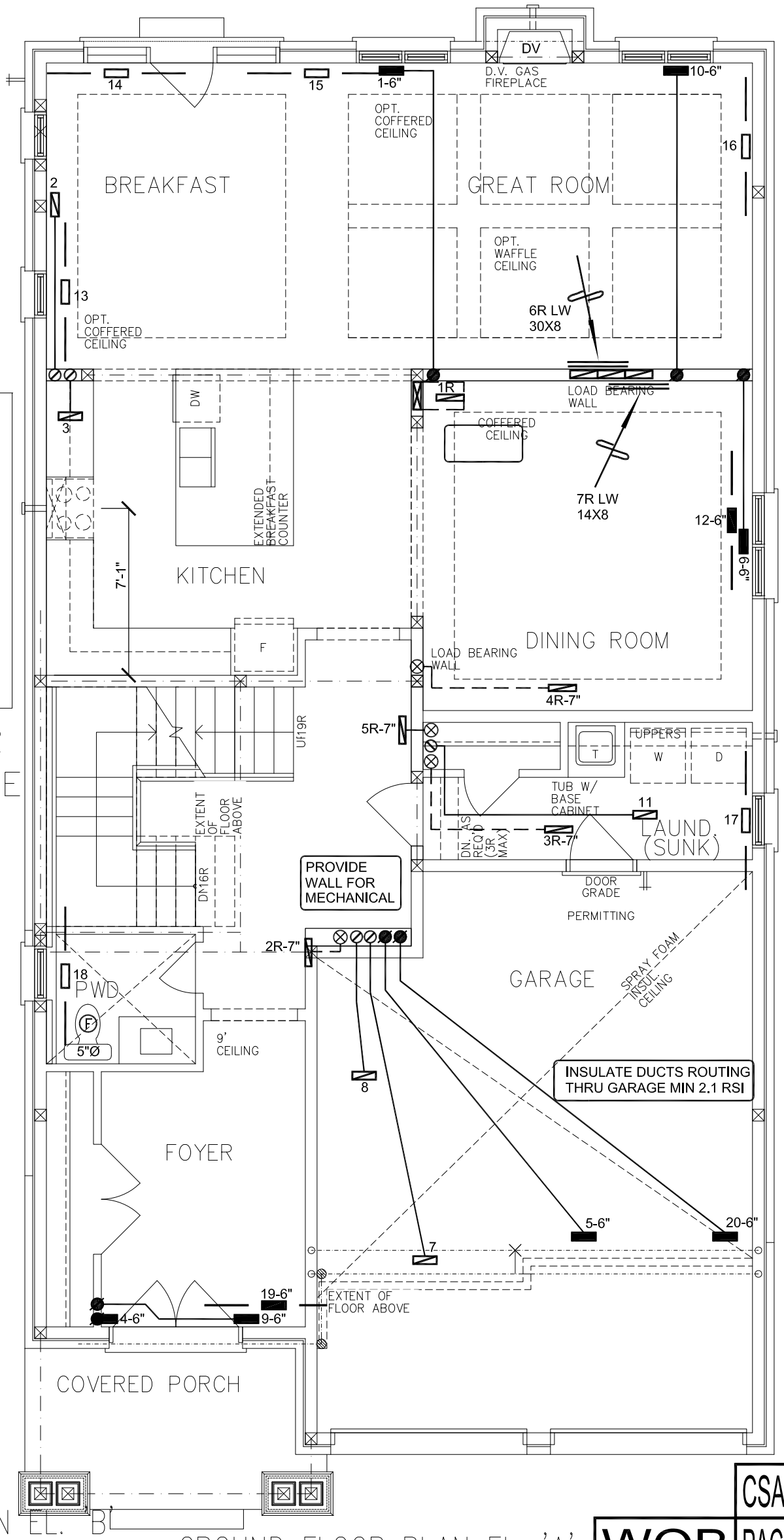
PART. GROUND FLOOR
PLAN, W/ OPT. SERVICE



GROUND FLOOR PLAN EL. CB'



GROUND FLOOR PLAN EL. B'



GROUND FLOOR PLAN EL. 'A'

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

CSA-F280-12

WOB | 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.		

REVISIONS

Client
GOLD PARK HOMES

Project Name
PINE VALLEY PH 2
VAUGHAN, ONTARIO
WOB
VALLEYVIEW
4002 3179 sqft

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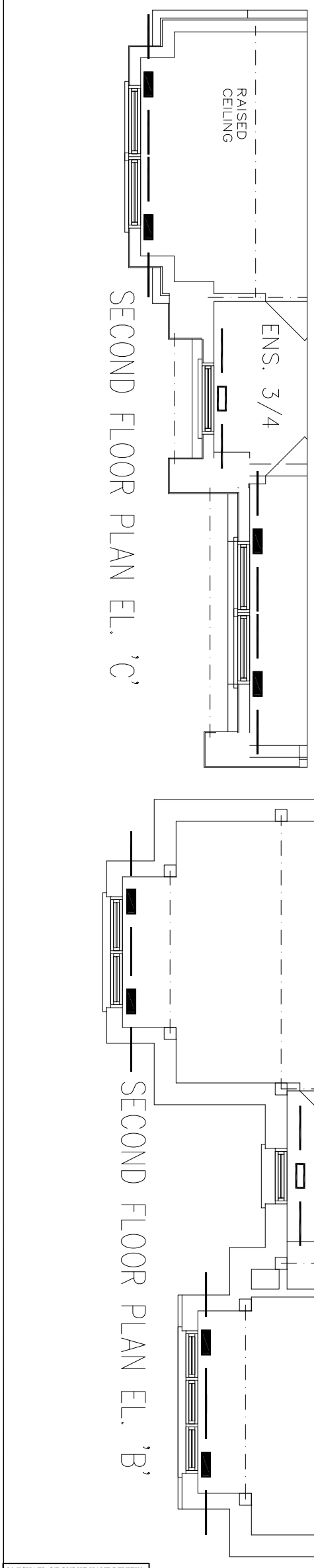
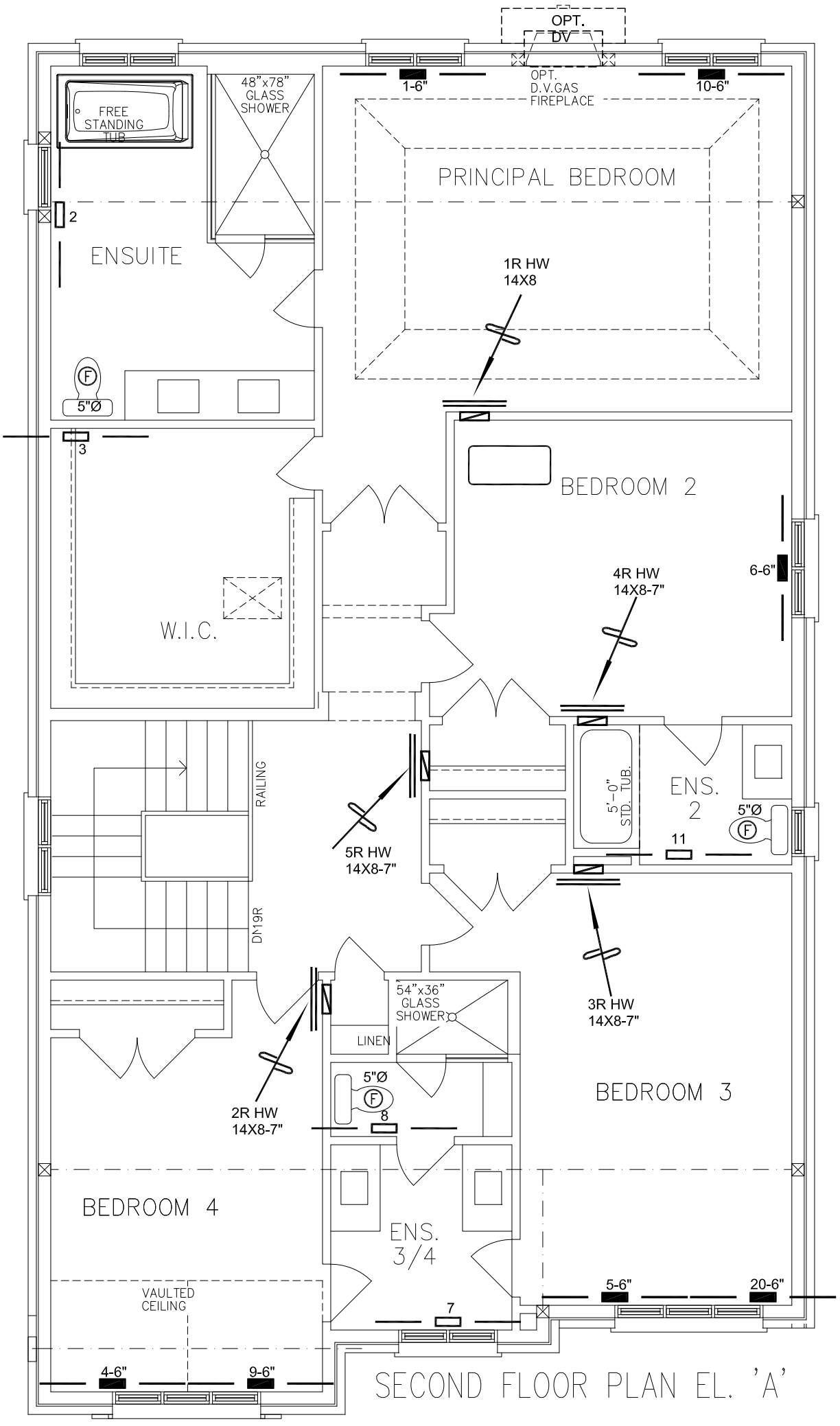
Specializing in Residential Mechanical Design Services

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
FIRST FLOOR
HEATING
LAYOUT

Date APR/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 96119





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WOB | PACKAGE A1

HVAC LEGEND

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	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER

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REVISIONS

Client
GOLD PARK HOMES

Project Name
PINE VALLEY PH 2
VAUGHAN, ONTARIO
WOB
VALLEYVIEW
4002 3179 sqft

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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date APR/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 96119