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:** 5013 - ELEV B - RIVERVIEW WO/ LOFT - 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.

May 5, 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 | WO/ LOFT - WOB | DATE May-22 | WINTER NATURAL AIR CHANGE RATE 0.407 | HEAT LOSS ΔT °F. 76 | CSA-F280-12

BUILDER: GOLD PARK HOMES | TYPE: 5013 - ELEV B - RIVERVIEW | GFA: 4501 | LO# 96527 | SUMMER NATURAL AIR CHANGE RATE 0.137 | HEAT GAIN ΔT °F. 13 | SB-12 PACKAGE A1

ROOM USE			PBR			ENS			WIC			BED-2			BED-3			BED-4				ENS-3			ENS-2			ENS-4			WIC-E		
EXP. WALL			37			16			10			18			12			47				25			11			7			8		
CLG. HT.			9			9			9			9			9			9				9			9			9			9		
	FACTORS																																
GRS.WALL AREA	LOSS	GAIN	333			144			90			162			108			423				225			99			63			72		
GLAZING			LOSS		GAIN	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	20	426	319	0	0	0	8	170	128		0	0	0	10	213	160	0	0	0	0	0	0
EAST	21.3	41.6	0	0	0	0	0	0	0	0	0	0	0	0	75	1596	3116	69	1468	2867		12	255	499	0	0	0	0	0	0	0	0	0
SOUTH	21.3	24.9	0	0	0	30	638	747	6	128	149	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	10	213	249	6	128	149
WEST	21.3	41.6	46	979	1911	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
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	0	0	0
DOORS	25.2	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	505	85		0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.5	0.8	287	1281	216	114	509	86	84	375	63	142	634	107	33	147	25	326	1455	245		213	951	160	89	397	67	53	237	40	66	295	50
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	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	340	436	200	256	329	150	89	114	52	286	367	168	224	287	132	310	398	182		127	163	75	255	327	150	107	137	63	117	150	69
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0	0	0	0	0	26	71	33	35	96	44		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	204	520	88	250	638	107	0	0	0		59	150	25	135	344	58	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			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		
SUBTOTAL HT LOSS			2696			1476			617			1947			2740			4092				1519			1282			587			572		
SUB TOTAL HT GAIN					2327			983			265			682			3413			3551			759			434			352			268	
LEVEL FACTOR / MULTIPLIER			0.20	0.44		0.20	0.44		0.20	0.44		0.20	0.44		0.20	0.44		0.20	0.44			0.20	0.44		0.20	0.44		0.20	0.44		0.20	0.44	
AIR CHANGE HEAT LOSS				1173			642			268			847			1192			1781				661			558			255			249	
AIR CHANGE HEAT GAIN					178			75			20			52			261			271			58			33			27			20	
DUCT LOSS				0			0			0			279			393			0			218			184			0			0		
DUCT GAIN					0			0			0			203			497			0			82			47			0			0	
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240		0		0	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					1053			0			0			1053			1053			1053			0			0			0			0	
TOTAL HT LOSS BTU/H				3869			2118			885			3073			4325			5873			2398			2023			842			821	
TOTAL HT GAIN x 1.3 BTU/H					5249			1376			371			2899			7103			6650			1168			669			492			375	

ROOM USE			GRT			DIN			KT/BF			OFF			LND				FOY			MUD						WOB			BAS		
EXP. WALL			55			32			59			30			0				21			34						53			173		
CLG. HT.			11			11			11			11			9				11			11						10			10		
	FACTORS																																
GRS.WALL AREA	LOSS	GAIN	605			352			649			330			0				231			374						530			1211		
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				44	936	703	0	0	0
EAST	21.3	41.6	0	0	0	0	0	0	0	0	0	48	1021	1994	0	0	0		25	532	1039	0	0	0				0	0	0	0	0	0
SOUTH	21.3	24.9	0	0	0	28	596	697	38	809	946	0	0	0	0	0	0		0	0	0	0	0	0				7	149	174	7	149	174
WEST	21.3	41.6	192	4086	7978	0	0	0	102	2171	4238	0	0	0	0	0	0		0	0	0	0	0	0				38	809	1579	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		30	757	128	20	505	85				0	0	0	0	0	0
NET EXPOSED WALL	4.5	0.8	413	1843	310	324	1446	244	509	2272	383	282	1258	212	0	0	0		176	785	132	354	1580	266				441	1968	331	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	519	1868	315
EXPOSED CLG	1.3	0.6	397	509	233	0	0	0	0	0	0	0	0	0	81	104	48		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	0	0	0	0	0
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	24	61	10		0	0	0	0	0	0				0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0			0			0			0			0				0			0									3079		
SLAB ON GRADE HEAT LOSS			0			0			0			0			0				0			0						763					
SUBTOTAL HT LOSS			6438			2042			5251			2280			165				2075			2085						4625			5095		
SUB TOTAL HT GAIN					8522			941			5567			2206			58			1299			351					2788			489	
LEVEL FACTOR / MULTIPLIER			0.30	0.57		0.30	0.57		0.30	0.57		0.30	0.57		0.20	0.44			0.30	0.57		0.30	0.57								0.50	1.98	
AIR CHANGE HEAT LOSS				3686			1169			3006			1305			72				1188			1193									19244	
AIR CHANGE HEAT GAIN					651			72			425			169			4			99			27										250
DUCT LOSS				0			0			0			0			24			0			0									0		
DUCT GAIN					0			0			0			0			112			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
HEAT GAIN APPLIANCES/LIGHTS					1053			1053			1053			1053			1053			0			0										
TOTAL HT LOSS BTU/H				10124			3211			8256			3585			261			3263			3278						5388			24339		
TOTAL HT GAIN x 1.3 BTU/H					13294			2686			9159			4457			1595			1817			491					3624			961	

TOTAL HEAT GAIN BTU/H: 64954 TONS: 5.41 LOSS DUE TO VENTILATION LOAD BTU/H: 6156 STRUCTURAL HEAT LOSS: 87932 TOTAL COMBINED HEAT LOSS BTU/H: 94088

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 — WO/ LOFT - WOB
BUILDER: GOLD PARK HOMES — TYPE: 5013 - ELEV B - RIVERVIEW — DATE: May-22 — GFA: 4501 — LO# 96527 — **FURNACE 1**

HEATING CFM	1170	COOLING CFM	1170	furnace pressure	0.6	
TOTAL HEAT LOSS	61,444	TOTAL HEAT GAIN	36,489	furnace filter	0.05	FURNACE HEAT LOSS + HRV / ERV HEAT LOSS = 64522 BTUH
AIR FLOW RATE CFM	19.04	AIR FLOW RATE CFM	32.06	a/c coil pressure	0.2	
				available pressure for s/a & r/a	0.35	

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	0	12	6
R/A	0	0	0	2	1

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

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

$LENNOX
ML196UH090XE36C **90**
FAN SPEED
LOW 0
MEDLOW 0
MEDIUM 0
MEDIUM HIGH 1170
HIGH 1300

AFUE = 96 %
INPUT (BTU/H) = 88,000
OUTPUT (BTU/H) = **85,600**
DESIGN CFM = **1170**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 68 °F

RUN #	19	20	21	22	23	24
ROOM NAME	FOY	GRT	GRT	GRT	GRT	DIN
RM LOSS MBH.	3.26	2.53	2.53	2.53	2.53	3.21
CFM PER RUN HEAT	62	48	48	48	48	61
RM GAIN MBH.	1.82	3.32	3.32	3.32	3.32	2.69
CFM PER RUN COOLING	58	107	107	107	107	86
ADJUSTED PRESSURE	0.17	0.15	0.15	0.15	0.15	0.16
ACTUAL DUCT LGH.	47	56	49	45	38	27
EQUIVALENT LENGTH	100	110	150	130	150	140
TOTAL EFFECTIVE LENGTH	147	166	199	175	188	167
ADJUSTED PRESSURE	0.12	0.09	0.08	0.09	0.08	0.1
ROUND DUCT SIZE	5	**6**	**6**	**6**	**6**	5
HEATING VELOCITY (ft/min)	455	245	245	245	245	448
COOLING VELOCITY (ft/min)	426	546	546	546	546	631
OUTLET GRILL SIZE	3X10	4X10	4X10	4X10	4X10	3X10
TRUNK	F	D	D	D	D	F

RUN #	25	26	27	28	29	30	31	32	33	34	35	36
ROOM NAME	KT/BF	KT/BF	KT/BF	OFF	OFF	MUD	BAS	BAS	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.75	2.75	2.75	1.79	1.79	3.28	4.95	4.95	4.95	4.95	4.95	4.95
CFM PER RUN HEAT	52	52	52	34	34	62	94	94	94	94	94	94
RM GAIN MBH.	3.05	3.05	3.05	2.23	2.23	0.49	0.76	0.76	0.76	0.76	0.76	0.76
CFM PER RUN COOLING	98	98	98	71	71	16	24	24	24	24	24	24
ADJUSTED PRESSURE	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	34	39	31	65	60	21	66	37	49	16	15	49
EQUIVALENT LENGTH	100	140	170	130	120	140	130	140	140	130	130	130
TOTAL EFFECTIVE LENGTH	134	179	201	195	180	161	196	177	189	146	145	179
ADJUSTED PRESSURE	0.12	0.09	0.08	0.09	0.1	0.11	0.08	0.09	0.09	0.11	0.11	0.09
ROUND DUCT SIZE	**6**	**6**	**6**	5	5	5	**6**	**6**	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	265	265	265	250	250	455	479	479	479	479	479	479
COOLING VELOCITY (ft/min)	500	500	500	521	521	117	122	122	122	122	122	122
OUTLET GRILL SIZE	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10
TRUNK	E	E	E	F	F	F	D	D	E	E	F	F

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	0	0.00	0	0	x	8	0	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	0	0.00	0	0	x	8	0	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	0	0.00	0	0	x	8	0	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	380	0.08	9.8	14	x	8	489	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	724	0.08	12.4	20	x	8	652	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	441	0.09	10	12	x	8	662	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	0.07	0	0	x	8	0
TRUNK P	0	0.07	0	0	x	8	0
TRUNK Q	0	0.07	0	0	x	8	0
TRUNK R	0	0.07	0	0	x	8	0
TRUNK S	0	0.07	0	0	x	8	0
TRUNK T	0	0.07	0	0	x	8	0
TRUNK U	0	0.07	0	0	x	8	0
TRUNK V	0	0.07	0	0	x	8	0
TRUNK W	415	0.07	10.4	12	x	8	623
TRUNK X	755	0.07	13.1	20	x	8	680
TRUNK Y	0	0.07	0	0	x	8	0
TRUNK Z	0	0.07	0	0	x	8	0
DROP	1170	0.07	15.4	24	x	10	**702**

RETURN AIR #						6	7										**BR**
AIR VOLUME	0	0	0	0	0	485	415	0	0	0	0	0	0	0	0	0	270
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	1	1	1	1	1	24	50	1	1	1	1	1	1	1	1	1	16
EQUIVALENT LENGTH	0	0	0	0	0	145	170	0	0	0	0	0	0	0	0	0	150
TOTAL EFFECTIVE LH	1	1	1	1	1	169	220	1	1	1	1	1	1	1	1	1	166
ADJUSTED PRESSURE	14.80	14.80	14.80	14.80	14.80	0.09	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	0	0	0	0	0	10.4	10.4	0	0	0	0	0	0	0	0	0	8.3
INLET GRILL SIZE	0	0	0	0	0	8	8	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	X
INLET GRILL SIZE	0	0	0	0	0	30	30	0	0	0	0	0	0	0	0	0	24

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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SITE NAME: PINE VALLEY PH 2 — WO/ LOFT - WOB
BUILDER: GOLD PARK HOMES — TYPE: 5013 - ELEV B - RIVERVIEW — DATE: May-22 — GFA: 4501 — LO# 96527 — **FURNACE 2**

HEATING CFM	980	COOLING CFM	980	furnace pressure	0.6
TOTAL HEAT LOSS	26,488	TOTAL HEAT GAIN	27,947	furnace filter	0.05
AIR FLOW RATE CFM	37	AIR FLOW RATE CFM	35.07	a/c coil pressure	0.2
				available pressure for s/a & r/a	0.35

FURNACE HEAT LOSS + HRV / ERV HEAT LOSS = 29566 BTUH

$LENNOX — AFUE = 96 %
ML196UH045XE36B **45** — INPUT (BTU/H) = 44,000
FAN SPEED — OUTPUT (BTU/H) = **42,800**

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	19	0	0
R/A	0	0	5	0	0

plenum pressure s/a	0.18	r/a pressure	0.17
max s/a dif press. loss	0.02	r/a grille press. Loss	0.02
min adjusted pressure s/a	0.16	adjusted pressure r/a	0.15

LOW	620
MEDLOW	685
MEDIUM	980
MEDIUM HIGH	1110
HIGH	0

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

TEMPERATURE RISE 40 °F

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

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	17	18
ROOM NAME	PBR	PBR	ENS	ENS	WIC	WIC-E	BED-2	BED-2	ENS-3	BED-3	BED-4	BED-4	BED-4	ENS-2	BED-3	ENS-4	LND
RM LOSS MBH.	1.93	1.93	1.06	1.06	0.89	0.82	1.54	1.54	2.40	1.44	1.47	1.47	1.47	2.02	1.44	0.84	0.26
CFM PER RUN HEAT	72	72	39	39	33	30	57	57	89	53	54	54	54	75	53	31	10
RM GAIN MBH.	2.62	2.62	0.69	0.69	0.37	0.37	1.45	1.45	1.17	2.37	1.66	1.66	1.66	0.67	2.37	0.49	1.60
CFM PER RUN COOLING	92	92	24	24	13	13	51	51	41	83	58	58	58	23	83	17	56
ADJUSTED PRESSURE	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.17	0.17
ACTUAL DUCT LGH.	52	63	48	16	51	19	72	77	78	69	69	66	73	84	64	75	46
EQUIVALENT LENGTH	210	190	255	130	245	120	170	180	200	190	180	190	170	190	180	160	130
TOTAL EFFECTIVE LENGTH	262	253	303	146	296	139	242	257	278	259	249	256	243	274	244	235	176
ADJUSTED PRESSURE	0.06	0.06	0.06	0.12	0.06	0.12	0.07	0.07	0.06	0.06	0.07	0.07	0.07	0.06	0.07	0.07	0.1
ROUND DUCT SIZE	**6**	**6**	5	4	4	4	5	5	**6**	**6**	**6**	**6**	**6**	**6**	**6**	4	5
HEATING VELOCITY (ft/min)	367	367	286	447	379	344	419	419	454	270	275	275	275	382	270	356	73
COOLING VELOCITY (ft/min)	469	469	176	275	149	149	374	374	209	423	296	296	296	117	423	195	411
OUTLET GRILL SIZE	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10
TRUNK	C	C	C	C	C	C	B	B	A	A	A	A	A	B	A	A	B

RUN #	37	38
ROOM NAME	BED-3	BED-4
RM LOSS MBH.	1.44	1.47
CFM PER RUN HEAT	53	54
RM GAIN MBH.	2.37	1.66
CFM PER RUN COOLING	83	58
ADJUSTED PRESSURE	0.16	0.17
ACTUAL DUCT LGH.	67	71
EQUIVALENT LENGTH	190	170
TOTAL EFFECTIVE LENGTH	257	241
ADJUSTED PRESSURE	0.06	0.07
ROUND DUCT SIZE	**6**	**6**
HEATING VELOCITY (ft/min)	270	275
COOLING VELOCITY (ft/min)	423	296
OUTLET GRILL SIZE	4X10	4X10
TRUNK	A	A

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	495	0.06	11.6	18	x	8	495	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	694	0.06	13.1	22	x	8	568	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	979	0.06	15	26	x	8	678	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	0	0.00	0	0	x	8	0	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	0	0.00	0	0	x	8	0	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	x	8	0

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	825	0.05	14.7	26	x	8	571
TRUNK Y	450	0.05	11.7	16	x	8	506
TRUNK Z	155	0.05	7.8	8	x	8	349
DROP	980	0.05	15.7	24	x	10	588

RETURN AIR #	1	2	3	4	5												BR
AIR VOLUME	155	260	115	115	335	0	0	0	0	0	0	0	0	0	0	0	0
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	62	93	79	75	69	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	170	195	195	245	230	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	232	288	274	320	299	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.06	0.05	0.05	0.05	0.05	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80
ROUND DUCT SIZE	7.5	9.5	7	7	10.5	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	30	14	14	30	0	0	0	0	0	0	0	0	0	0	0	0

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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TYPE: 5013 - ELEV B - RIVERVIEW LO # 96527
SITE NAME: PINE VALLEY PH 2 WO/ LOFT - 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	6	@ 10.6 cfm	63.6	cfm
Other Rooms	4	@ 10.6 cfm	42.4	cfm
Table 9.32.3.A.		TOTAL	180.2	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	180.2	cfm
Less Principal Ventil. Capacity	150	cfm
Required Supplemental Capacity	30.2	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE V150H Location: BSMT

150.0 cfm [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
150.0 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-2	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-3	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-4	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE V150H INSTALL 2 HRV / ERV's

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-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

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 96527 Model: 5013 - ELEV B - RIVERVIEW Builder: GOLD PARK HOMES Date: 2022-05-05

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	2122	10	21220
First	2122	11	23342
Second	2778	9	25002
Third	0	9	0
Fourth	0	9	0
		Total:	69,564.0 ft³
		Total:	1969.8 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 547.18 x 42 °C x 1.2 = 11280 W

= **38487 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 547.18 x 7 °C x 1.2 = 637 W

= **2175 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

x 2 HRV / ERV's

300 CFM x 76 °F x 1.08 x 0.25 = **6156 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

300 CFM x 13 °F x 1.08 x 0.25 = **1,037 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	38,487	9,720	1.980
2	0.3		20,170	0.572
3	0.2		17,692	0.435
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
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5013 - ELEV B - RIVERVIEW WO/ LOFT - WOB **BUILDER:** GOLD PARK HOMES
SFQT: 4501 **LO#** 96527 **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):	69564.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 70.0 ft WIDTH:	43.0 ft	EXPOSED PERIMETER:	173.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	53.0 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

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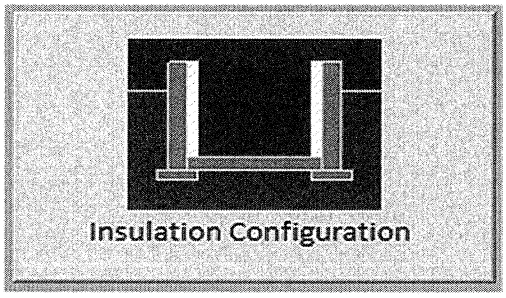
Residential Foundation Thermal Load Calculator

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)

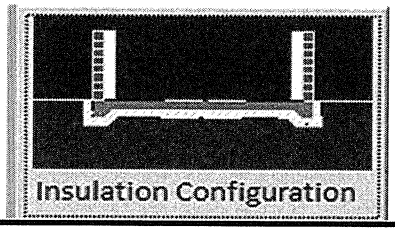
Foundation Dimensions		
Floor Length (m):	**4.6**	 Insulation Configuration
Floor Width (m):	**13.1**	
Exposed Perimeter (m):	**52.7**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**1.84**	
Window Area (m^2):	**0.7**	
Door Area (m^2):	**0.0**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):		**902**

TYPE: 5013 - ELEV B - RIVERVIEW WO/ LOFT - WOB
LO# 96527

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):	**1.5**	 Insulation Configuration
Width (m):	**13.1**	
Exposed Perimeter (m):	**16.2**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Results		
Heating Load (Watts):	**224**	

TYPE: 5013 - ELEV B - RIVERVIEW WO/ LOFT - WOB
LO# 96527

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

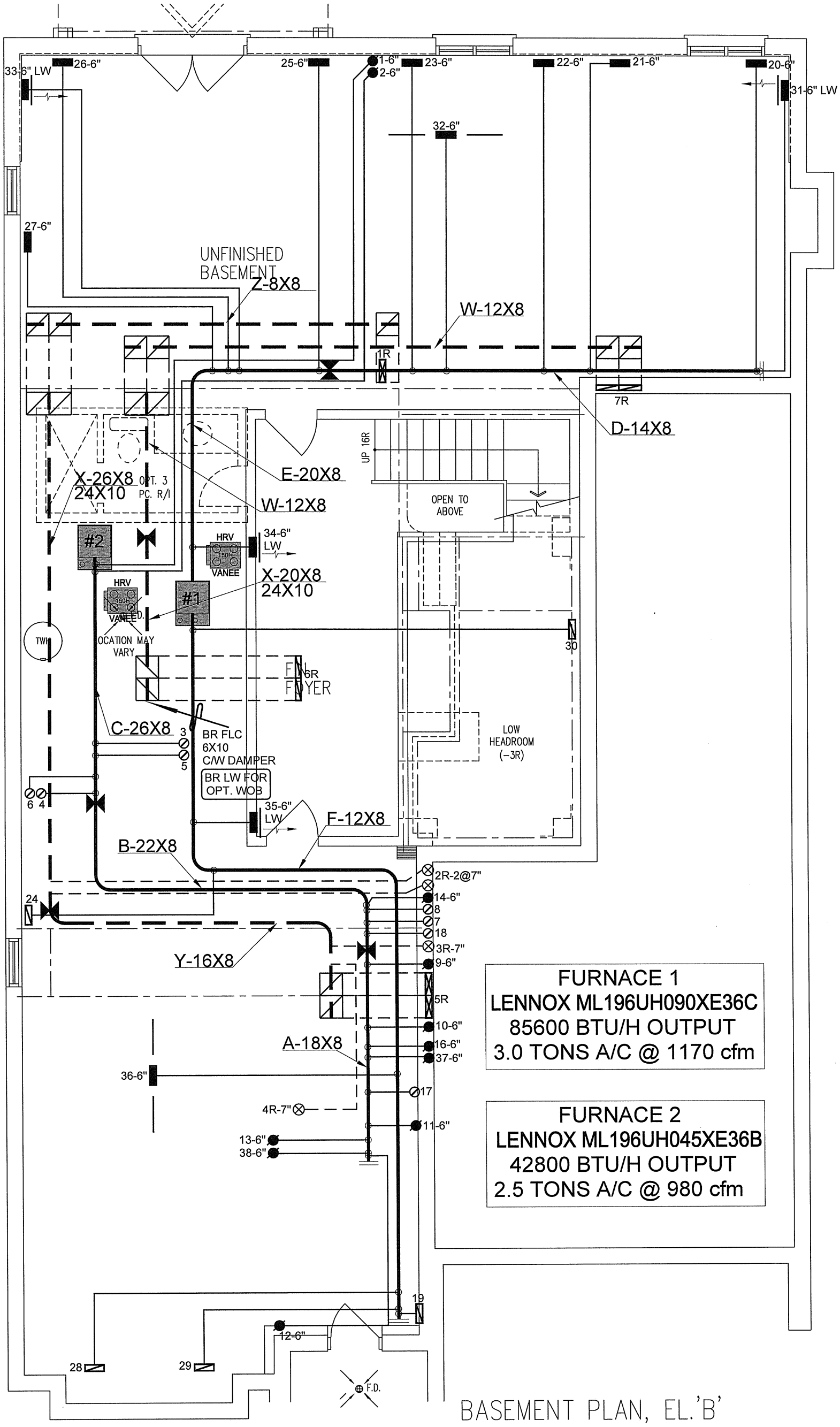
Air Infiltration Residential Load Calculator

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):	1969.8
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 2625.8 cm^2
	3.57 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 70.8 / Total Exhaust 70.8
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: 5013 - ELEV B - RIVERVIEW WO/ LOFT - WOB

LO# 96527



BASEMENT PLAN, EL.'B'

FURNACE 1
LENNOX ML196UH090XE36C
85600 BTU/H OUTPUT
3.0 TONS A/C @ 1170 cfm

FURNACE 2
LENNOX ML196UH045XE36B
42800 BTU/H OUTPUT
2.5 TONS A/C @ 980 cfm

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.

WOB

CSA-F280-12

PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		30"x8" RETURN AIR GRILLE
	SUPPLY AIR BOOT ABOVE		FRA- FLOOR RETURN AIR GRILLE
	6" SUPPLY AIR STACK FROM 2nd FLOOR		
	6" SUPPLY AIR STACK 2nd FLOOR		RETURN AIR STACK ABOVE
			RETURN AIR STACK 2nd FLOOR
			REDUCER

REVISIONS

No.	Description	Date
1.		
2.		
3.		

Client
GOLD PARK HOMES

Project Name
PINE VALLEY PH 2
VAUGHAN, ONTARIO
WOB
RIVERVIEW - WO/ LOFT
5013 - ELEV B 4501 sqft

HVAC DESIGNS LTD.
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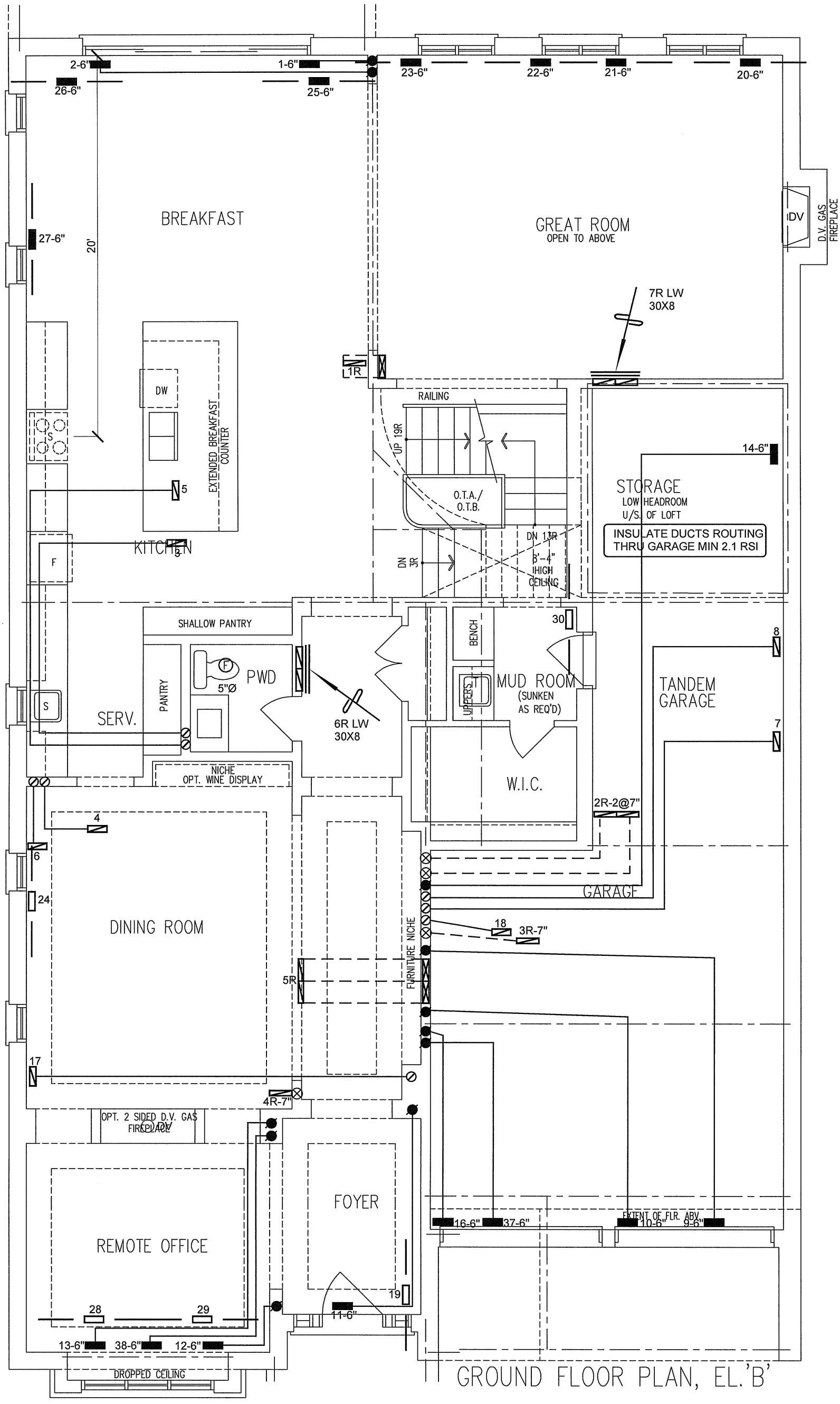
Email: info@hvacdesigns.ca
Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services

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.

	S/A	R/A	FANS
2ND	19	5	6
1ST	12	2	2
BAS	6	1	0

Sheet Title
BASEMENT HEATING LAYOUT

Date MAY/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 96634



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

WOB

CSA-F280-12

PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR
	14"x8" RETURN AIR GRILLE		30"x8" RETURN AIR GRILLE
	FRA- FLOOR RETURN AIR GRILLE		REDUCER
	RETURN AIR STACK ABOVE		RETURN AIR STACK 2nd FLOOR

REVISIONS

No.	Description	Date
1.		
2.		
3.		

Client
GOLD PARK HOMES

Project Name
PINE VALLEY PH 2
VAUGHAN, ONTARIO
WOB
RIVERVIEW - WO/ LOFT
5013 - ELEV B 4501 sqft

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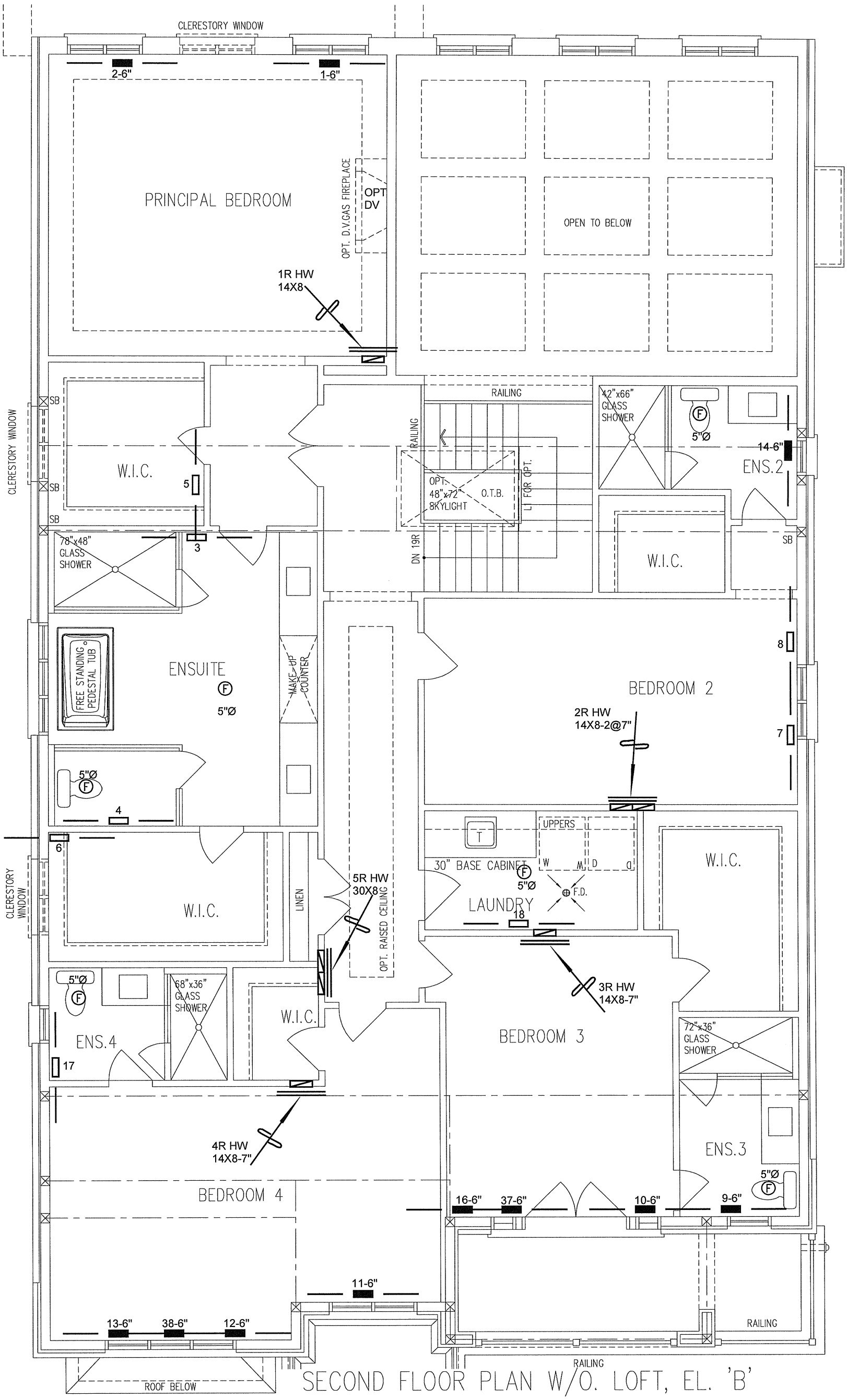
Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services

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
FIRST FLOOR HEATING LAYOUT

Date MAY/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 96634



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.

WOB

CSA-F280-12

PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR GRILLE
	6" SUPPLY AIR STACK 2nd FLOOR		6" SUPPLY AIR BOOT ABOVE		SUPPLY AIR STACK FROM 2nd FLOOR
	FRA- FLOOR RETURN AIR GRILLE		30"x8" RETURN AIR GRILLE		14"x8" RETURN AIR GRILLE
	REDUCER		RETURN AIR STACK ABOVE		RETURN AIR STACK 2nd FLOOR

REVISIONS

No.	Description	Date
1.		
2.		
3.		

Client
GOLD PARK HOMES

Project Name
PINE VALLEY PH 2
VAUGHAN, ONTARIO
WOB
RIVERVIEW - WO/ LOFT
5013 - ELEV B 4501 sqft

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
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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date MAY/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 96634

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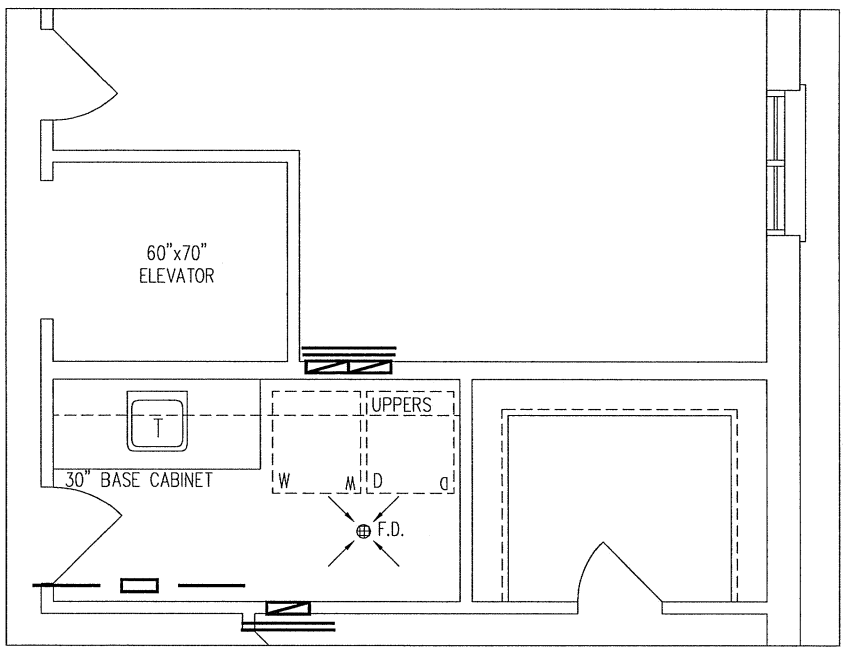
HVAC DESIGNS LTD.

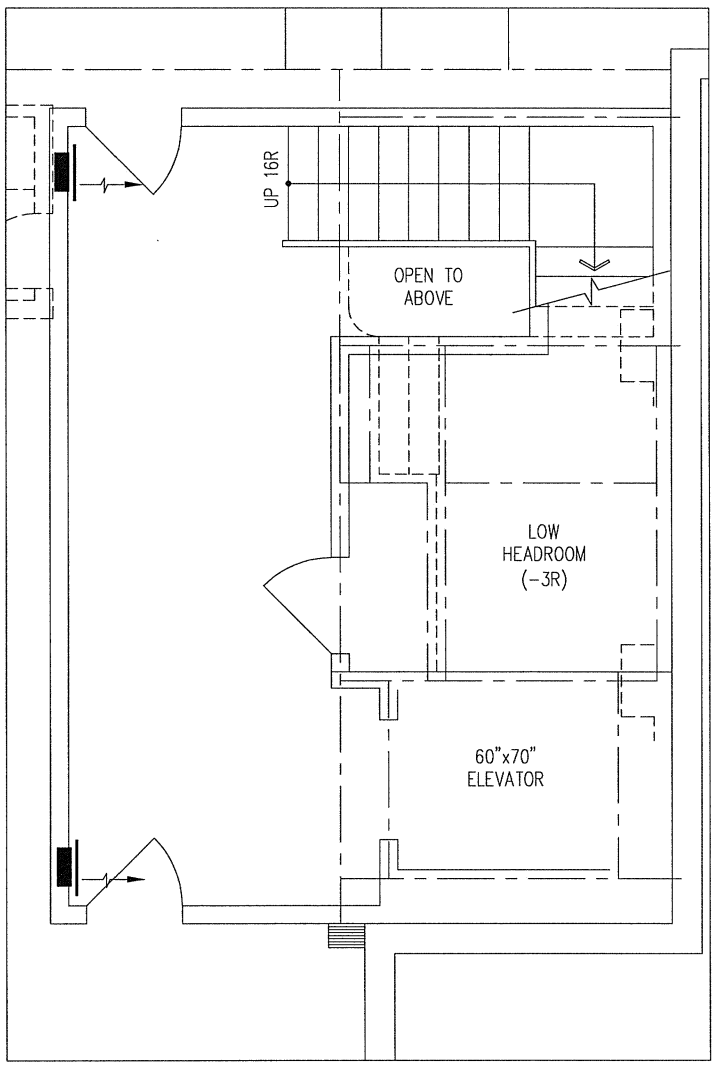
WOB

CSA-F280-12

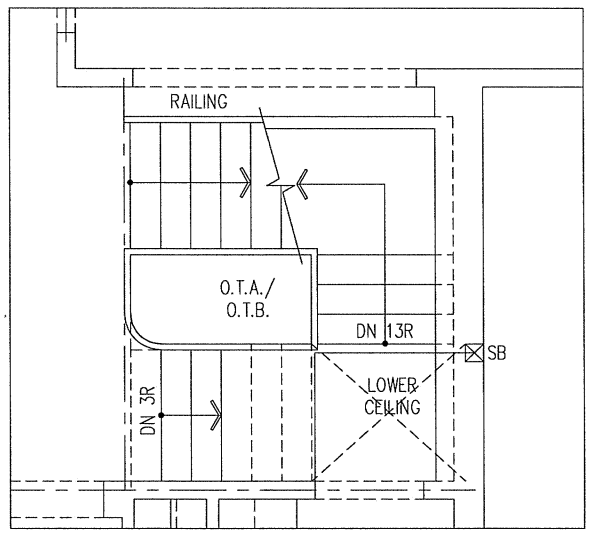
PACKAGE A1



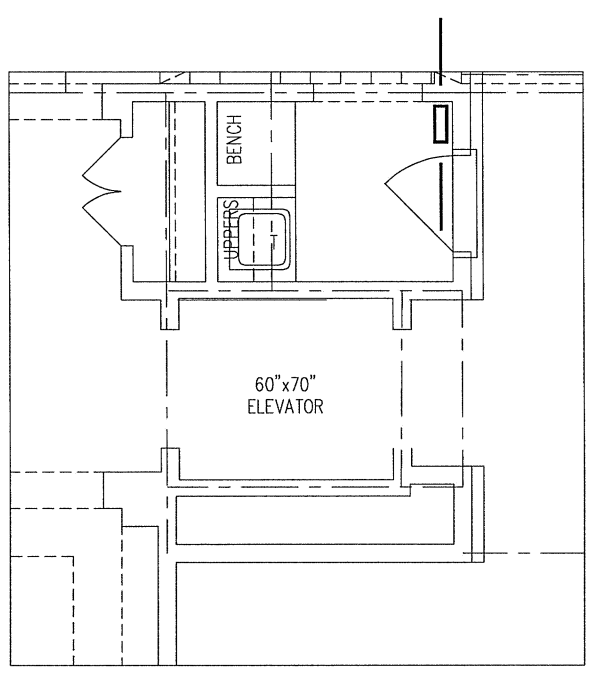
PART. SECOND FLOOR PLAN W/O. LOFT W/ ELEVATOR, EL. 'B'



PART BASEMENT FLOOR PLAN, W/ OPT. ELEVATOR, EL. 'B'



PART. GROUND FLOOR PLAN, W/ NO LOFT CONDITION, EL. 'B'



PART. GROUND FLOOR PLAN, W/ OPT. ELEVATOR, EL. 'B'

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		SUPPLY AIR GRILLE		RETURN AIR STACK ABOVE
	6" SUPPLY AIR BOOT ABOVE		SUPPLY AIR GRILLE 6" BOOT		RETURN AIR GRILLE
	6" SUPPLY AIR STACK FROM 2nd FLOOR		SUPPLY AIR STACK FROM 2nd FLOOR		14"x8" RETURN AIR GRILLE
	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		30"x8" RETURN AIR GRILLE
	REDUCER		RETURN AIR STACK 2nd FLOOR		

REVISIONS

No.	Description	Date
1.		
2.		
3.		

Client
GOLD PARK HOMES

Project Name
PINE VALLEY PH 2
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Sheet Title
STRIP PLAN
HEATING
LAYOUT

Date MAY/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 96634