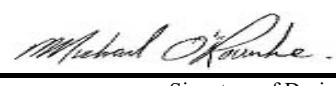


Schedule 1: Designer Information

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: 3106 MOD Project: PINE VALLEY DRIVE	
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.			
June 29, 2022		 Signature of Designer	
Date			

NOTE:

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

Application for a Permit Construct or Demolish – Effective January 1, 2015

SITE NAME: PINE VALLEY DRIVE		TYPE: 3106 MOD		GFA: 2935		DATE: Jun-22		WINTER NATURAL AIR CHANGE RATE 0.352		HEAT LOSS ΔT °F. 76		CSA-F280-12	
BUILDER: GOLD PARK HOMES						LO# 97838		SUMMER NATURAL AIR CHANGE RATE 0.115		HEAT GAIN ΔT °F. 13		SB-12 PACKAGE A1	
ROOM USE	EXP. WALL	PBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	WIC-2	WIC-3	ENS-2	OFF	
CLG. HT.	CLG. HT.	30	22	0	27	29	28	8	0	0	6	37	
		9	9	9	9	9	9	9	9	9	9	9	
GRS.WALL AREA	LOSS GAIN	270	198	0	243	261	252	72	0	0	54	333	
GLAZING	LOSS GAIN	LOSS GAIN	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	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	42 894 1745	0 0 0	0 0 0	0 0 0	0 0 0	42 894 1745	0 0 0	0 0 0	0 0 0	0 0 0	76 1617 3158	
SOUTH	21.3 24.9	12 255 299	23 489 573	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
WEST	21.3 41.6	0 0 0	0 0 0	0 0 0	19 404 789	19 404 789	0 0 0	7 149 291	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
SKYL.T.	37.2 101.5	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 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	0 0 0	0 0 0	0 0 0
NET EXPOSED WALL	4.5 0.8	216 964 162	175 781 132	0 0 0	224 1000 168	242 1080 182	210 937 158	65 290 49	0 0 0	0 0 0	54 241 41	257 1147 193	
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	0 0 0	0 0 0
EXPOSED CLG	1.3 0.6	224 287 132	105 135 62	120 154 71	176 226 103	210 270 123	195 250 115	8 10 5	112 144 66	84 108 49	90 116 53	292 375 172	
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	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	96 245 41	195 497 84	0 0 0	0 0 0	0 0 0	90 230 39	0 0 0	0 0 0
BASEMENT/CRAWL HEAT LOSS		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
SUBTOTAL HT LOSS		2401	1405	154	1630	1999	2578	449	144	108	586	3139	
SUB TOTAL HT GAIN		2338	766	71	1061	1136	2101	344	66	49	132	3523	
LEVEL FACTOR / MULTIPLIER	0.20 0.27	0.20 0.27	0.20 0.27	0.20 0.27	0.20 0.27	0.20 0.27	0.20 0.27	0.20 0.27	0.20 0.27	0.20 0.27	0.20 0.27	0.20 0.27	
AIR CHANGE HEAT LOSS		656	384	42	446	546	705	123	39	29	160	858	
AIR CHANGE HEAT GAIN		124	40	4	56	60	111	18	3	3	7	186	
DUCT LOSS		0	0	0	0	255	328	0	0	0	75	0	
DUCT GAIN		0	0	0	0	213	315	0	0	0	14	0	
HEAT GAIN PEOPLE	240	2	480	0	0	1	240	1	240	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS		693	0	0	693	693	693	0	0	0	0	693	
TOTAL HT LOSS BTU/H		3057	1789	196	2075	2800	3612	572	183	137	821	3997	
TOTAL HT GAIN x 1.3 BTU/H		4724	1048	97	2665	3044	4498	471	90	68	199	5722	

ROOM USE	EXP. WALL	KIT	GRT	MUD	W/R	FOY	LAUN	BAS
CLG. HT.	CLG. HT.	46	56	20	6	45	20	186
		11	11	11	11	11	11	9
GRS.WALL AREA	LOSS GAIN	506	616	220	66	495	220	1116
GLAZING	LOSS GAIN	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	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
EAST	21.3 41.6	0 0 0	54 1149 2244	0 0 0	0 0 0	50 1064 2078	0 0 0	4 85 166
SOUTH	21.3 24.9	0 0 0	97 2064 2415	0 0 0	0 0 0	0 0 0	0 0 0	4 85 100
WEST	21.3 41.6	59 1256 2452	32 681 1330	0 0 0	0 0 0	0 0 0	10 213 416	12 255 499
SKYL.T.	37.2 101.5	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
DOORS	25.2 4.3	0 0 0	0 0 0	20 505 85	0 0 0	40 1010 170	0 0 0	20 505 85
NET EXPOSED WALL	4.5 0.8	421 1879 316	433 1932 325	200 893 150	66 295 50	405 1807 304	210 937 158	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	558 2008 338
EXPOSED CLG	1.3 0.6	0 0 0	305 391 179	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	0	6351
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0	
SUBTOTAL HT LOSS		3688	6246	1398	295	3881	1150	9290
SUB TOTAL HT GAIN		3183	6506	235	50	2552	573	1188
LEVEL FACTOR / MULTIPLIER	0.30 0.36	0.30 0.36	0.30 0.36	0.30 0.36	0.30 0.36	0.30 0.36	0.30 0.36	0.50 1.07
AIR CHANGE HEAT LOSS		1325	2244	502	106	1395	413	9974
AIR CHANGE HEAT GAIN		168	344	12	3	135	30	63
DUCT LOSS		0	0	0	0	0	0	0
DUCT GAIN		0	0	0	0	0	0	0
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS		693	693	693	693	0	693	693
TOTAL HT LOSS BTU/H		5013	8489	1900	400	5276	1563	19264
TOTAL HT GAIN x 1.3 BTU/H		5258	9805	1223	68	3493	1685	2526

TOTAL HEAT GAIN BTU/H: 46959 TONS: 3.91 LOSS DUE TO VENTILATION LOAD BTU/H: 1631 STRUCTURAL HEAT LOSS: 61145 TOTAL COMBINED HEAT LOSS BTU/H: 62776

SITE NAME: PINE VALLEY DRIVE
BUILDER: GOLD PARK HOMES

TYPE: 3106 MOD

DATE: Jun-22

GFA: 2935 LO# 97838

HEATING CFM 1515 COOLING CFM 1515
TOTAL HEAT LOSS 61,145 TOTAL HEAT GAIN 46,684
AIR FLOW RATE CFM 24.78 AIR FLOW RATE CFM 32.45

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

\$*LENNOX
ML196UH070XE48B
FAN SPEED 70

AFUE = 96 %
INPUT (BTU/H) = 66,000
OUTPUT (BTU/H) = **63,900**

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

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

LOW 0
MEDLOW 1070
MEDIUM 1270
MEDIUM HIGH 1515
HIGH 1595

DESIGN CFM = **1515**
CFM @ .6" E.S.P.

TEMPERATURE RISE 39 °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	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	PBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	WIC-2	WIC-3	PBR	ENS-2	KIT	KIT	GRT	MUD	W/R	FOY	LAUN	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.53	1.79	0.20	1.04	1.40	1.81	0.57	0.18	0.14	1.53	0.82	2.51	2.51	2.83	1.90	0.40	2.64	1.56	2.75	2.75	2.75	2.75
CFM PER RUN HEAT	38	44	5	26	35	45	14	5	3	38	20	62	62	70	47	10	65	39	68	68	68	68
RM GAIN MBH.	2.36	1.05	0.10	1.33	1.52	2.25	0.47	0.09	0.07	2.36	0.20	2.63	2.63	3.27	1.22	0.07	1.75	1.69	0.36	0.36	0.36	0.36
CFM PER RUN COOLING	77	34	3	43	49	73	15	3	2	77	6	85	85	106	40	2	57	55	12	12	12	12
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	57	61	29	57	69	79	68	35	35	44	59	38	34	40	46	32	9	59	54	34	40	42
EQUIVALENT LENGTH	150	180	200	150	190	200	210	150	150	150	190	150	180	140	190	180	80	190	190	170	180	190
TOTAL EFFECTIVE LENGTH	207	241	229	207	259	279	278	185	185	194	249	188	214	180	236	212	89	249	244	204	220	232
ADJUSTED PRESSURE	0.08	0.07	0.08	0.08	0.07	0.06	0.06	0.09	0.09	0.09	0.07	0.09	0.08	0.09	0.07	0.08	0.19	0.07	0.07	0.08	0.08	0.07
ROUND DUCT SIZE	6	5	4	5	5	6	4	4	4	6	4	6	6	6	5	4	5	5	6	5	5	5
HEATING VELOCITY (ft/min)	194	323	57	191	257	229	161	57	34	194	229	316	316	357	345	115	477	286	347	499	499	499
COOLING VELOCITY (ft/min)	393	250	34	316	360	372	172	34	23	393	69	433	433	540	294	23	419	404	61	88	88	88
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10
TRUNK	A	B	C	C	D	D	D	E	E	A	D	C	E	B	D	E		D	D	C	B	A

RUN #	25	26	27	28	29	30	31	32	33	34	35
ROOM NAME	BAS	BED-4	GRT	GRT	FOY	OFF	OFF	BED-2	BED-3	BAS	BAS
RM LOSS MBH.	2.75	1.81	2.83	2.83	2.64	2.00	2.00	1.04	1.40	2.75	2.75
CFM PER RUN HEAT	68	45	70	70	65	50	50	26	35	68	68
RM GAIN MBH.	0.36	2.25	3.27	3.27	1.75	2.86	2.86	1.33	1.52	0.36	0.36
CFM PER RUN COOLING	12	73	106	106	57	93	93	43	49	12	12
ADJUSTED PRESSURE	0.17	0.17	0.16	0.16	0.17	0.16	0.16	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	4	81	45	47	4	50	45	64	56	32	34
EQUIVALENT LENGTH	130	190	180	150	80	190	190	150	220	180	170
TOTAL EFFECTIVE LENGTH	134	271	225	197	84	240	235	214	276	212	204
ADJUSTED PRESSURE	0.13	0.06	0.07	0.08	0.2	0.07	0.07	0.08	0.06	0.08	0.08
ROUND DUCT SIZE	5	6	6	6	5	6	6	5	5	5	5
HEATING VELOCITY (ft/min)	499	229	357	357	477	255	255	191	257	499	499
COOLING VELOCITY (ft/min)	88	372	540	540	419	474	474	316	360	88	88
OUTLET GRILL SIZE	3X10	4X10	4X10	4X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10
TRUNK	F	D	A	A		C	C	C	D	E	E

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	284	0.07	9	12	x	8	426	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	182	0.07	7.7	8	x	8	410	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	753	0.07	13	20	x	8	678	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	348	0.06	10.1	12	x	8	522	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	564	0.06	12.2	18	x	8	564	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	1385	0.06	17	28	x	10	712	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	705	0.05	13.8	22	x	8	577
TRUNK Z	0	0.05	0	0	x	8	0
DROP	1515	0.05	18.4	24	x	14	649

RETURN AIR #	1	2	3	4	5	6	7								BR
AIR VOLUME	115	155	115	155	115	320	320	0	0	0	0	0	0	0	220
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
ACTUAL DUCT LGH.	57	72	76	38	73	27	51	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	230	190	250	135	245	215	185	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	287	262	326	173	318	242	236	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.05	0.06	0.05	0.09	0.05	0.06	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	7	7.5	7	6.8	7	9.8	9.8	0	0	0	0	0	0	0	7.5
INLET GRILL SIZE	8	8	8	8	8	8	8	0	0	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	30	30	0	0	0	0	0	0	0	14

TYPE: 3106 MOD
SITE NAME: PINE VALLEY DRIVE

LO # 97838

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

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

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

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

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

TOTAL VENTILATION CAPACITY		9.32.3.3(1)
Basement + Master Bedroom	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>3</u> @ 10.6 cfm	<u>31.8</u> cfm
Kitchen & Bathrooms	<u>5</u> @ 10.6 cfm	<u>53</u> cfm
Other Rooms	<u>5</u> @ 10.6 cfm	<u>53.0</u> cfm
Table 9.32.3.A.	TOTAL	<u>180.2</u> cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED		9.32.3.4.(1)
1 Bedroom	31.8	cfm
2 Bedroom	47.7	cfm
3 Bedroom	63.6	cfm
4 Bedroom	79.5	cfm
5 Bedroom	95.4	cfm
TOTAL		<u>79.5</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>180.2</u>	cfm
Less Principal Ventil. Capacity	<u>79.5</u>	cfm
Required Supplemental Capacity	<u>100.7</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model:	VANEE V150H
Location:	BSMT
<u>79.5</u> 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
BATH	BY INSTALLING CONTRACTOR	50	☒	3.5
ENS-2	BY INSTALLING CONTRACTOR	50	☒	3.5
W/R	BY INSTALLING CONTRACTOR	50	☒	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	VANEE V150H	
<u>150</u>	cfm high	<u>35</u> cfm low
<u>75</u>	% Sensible Efficiency @ 32 deg F (0 deg C)	☒ HVI Approved

LOCATION OF INSTALLATION	
Lot:	Concession
Township	Plan:
Address	
Roll #	Building Permit #

BUILDER:	
GOLD PARK HOMES	
Name:	
Address:	
City:	
Telephone #:	Fax #:

INSTALLING CONTRACTOR	
Name:	
Address:	
City:	
Telephone #:	Fax #:

DESIGNER CERTIFICATION	
I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.	
Name:	HVAC Designs Ltd.
Signature:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	June-22

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

Michael O'Rourke

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 97838	Model: 3106 MOD	Builder: GOLD PARK HOMES	Date: 6/29/2022																																																									
Volume Calculation			Air Change & Delta T Data																																																									
House Volume <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr> <td>Bsmt</td> <td>1348</td> <td>9</td> <td>12132</td> </tr> <tr> <td>First</td> <td>1348</td> <td>11</td> <td>14828</td> </tr> <tr> <td>Second</td> <td>1633</td> <td>9</td> <td>14697</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>41,657.0 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>1179.6 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1348	9	12132	First	1348	11	14828	Second	1633	9	14697	Third	0	9	0	Fourth	0	9	0	Total:			41,657.0 ft³	Total:			1179.6 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 20%; text-align: center;">0.352</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.115</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DTDh</td> <td style="text-align: center;">22</td> <td style="text-align: center;">-20</td> <td style="text-align: center;">42</td> <td style="text-align: center;">76</td> </tr> <tr> <td>Summer DTDc</td> <td style="text-align: center;">24</td> <td style="text-align: center;">31</td> <td style="text-align: center;">7</td> <td style="text-align: center;">13</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.352	SUMMER NATURAL AIR CHANGE RATE	0.115	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-20	42	76	Summer DTDc	24	31	7	13
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.352 x 327.67 x 42 °C x 1.2 = 5847 W = 19949 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.115 x 327.67 x 7 °C x 1.2 = 320 W = 1093 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 76 °F x 1.08 x 0.25 = 1631 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 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	19,949	9,290	1.074																																																								
2	0.3		16,657	0.359																																																								
3	0.2		14,592	0.273																																																								
4	0		0	0.000																																																								
5	0		0	0.000																																																								
*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0																																																												

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 3106 MOD	BUILDER: GOLD PARK HOMES
SFQT: 2935	SITE: PINE VALLEY DRIVE
LO# 97838	

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):	41657.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.60	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 56.0 ft	WIDTH: 39.0 ft	EXPOSED PERIMETER:	186.0 ft

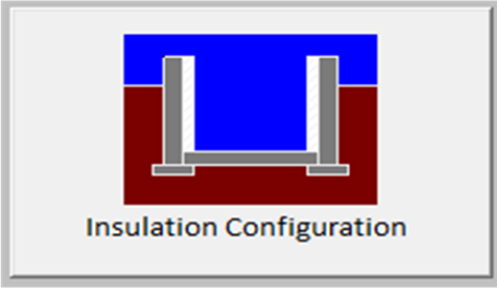
2012 OBC - COMPLIANCE PACKAGE		Compliance Package A1	
Component		Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value		60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value		31	27.65
Exposed Floor Minimum RSI (R)-Value		31	29.80
Walls Above Grade Minimum RSI (R)-Value		22	17.03
Basement 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



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):	17.1	 Insulation Configuration
Floor Width (m):	11.9	
Exposed Perimeter (m):	56.7	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.9	
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):		1861

TYPE: 3106 MOD

LO# 97838

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

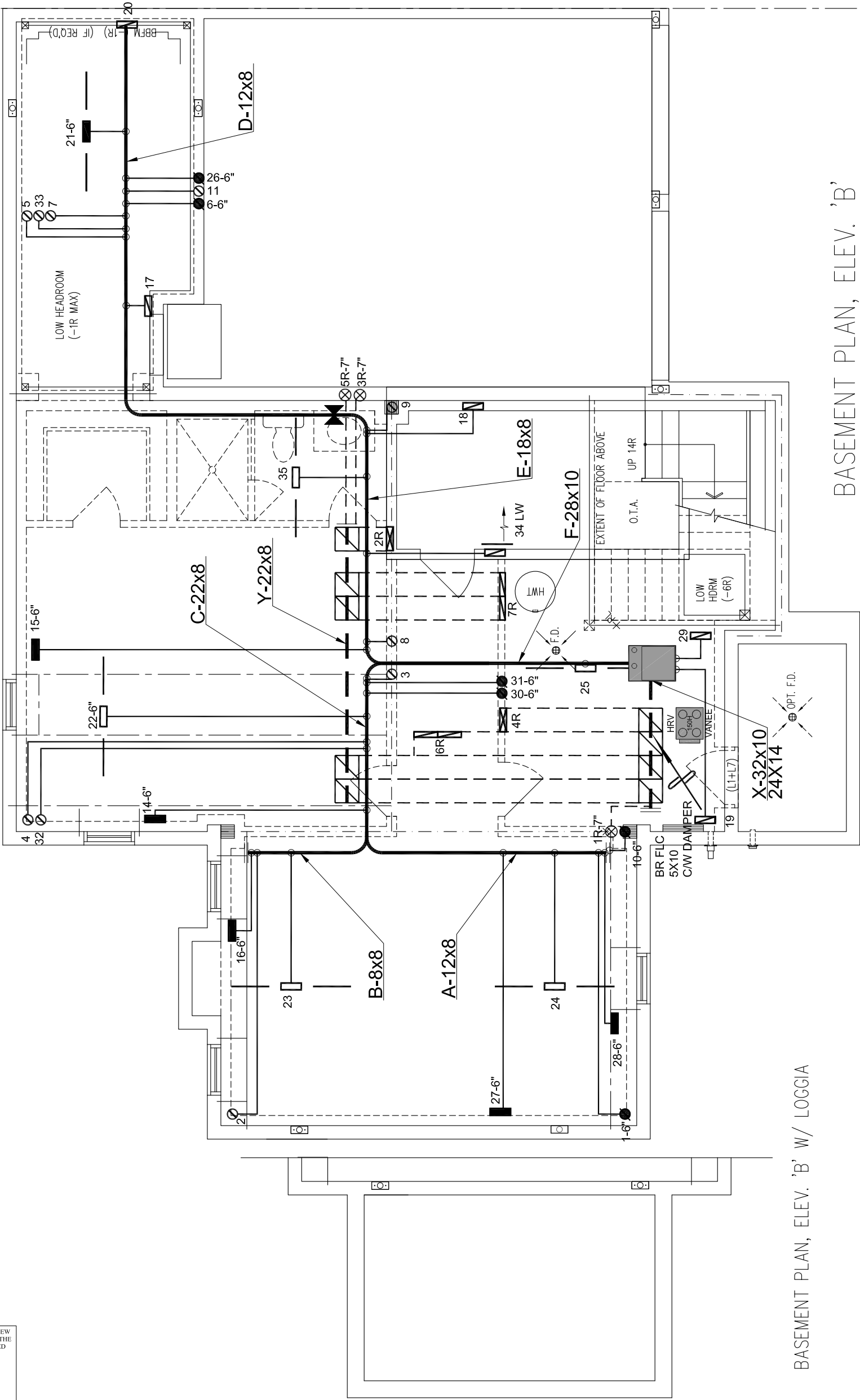
Weather Station Description				
Province:	Ontario			
Region:	Vaughan (Woodbridge)			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	7.01			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1179.6			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1572.4 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	37.5	37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.352			
Cooling Air Leakage Rate (ACH/H):	0.115			

TYPE: 3106 MOD

LO# 97838

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.



BASEMENT PLAN, ELEV. 'B'

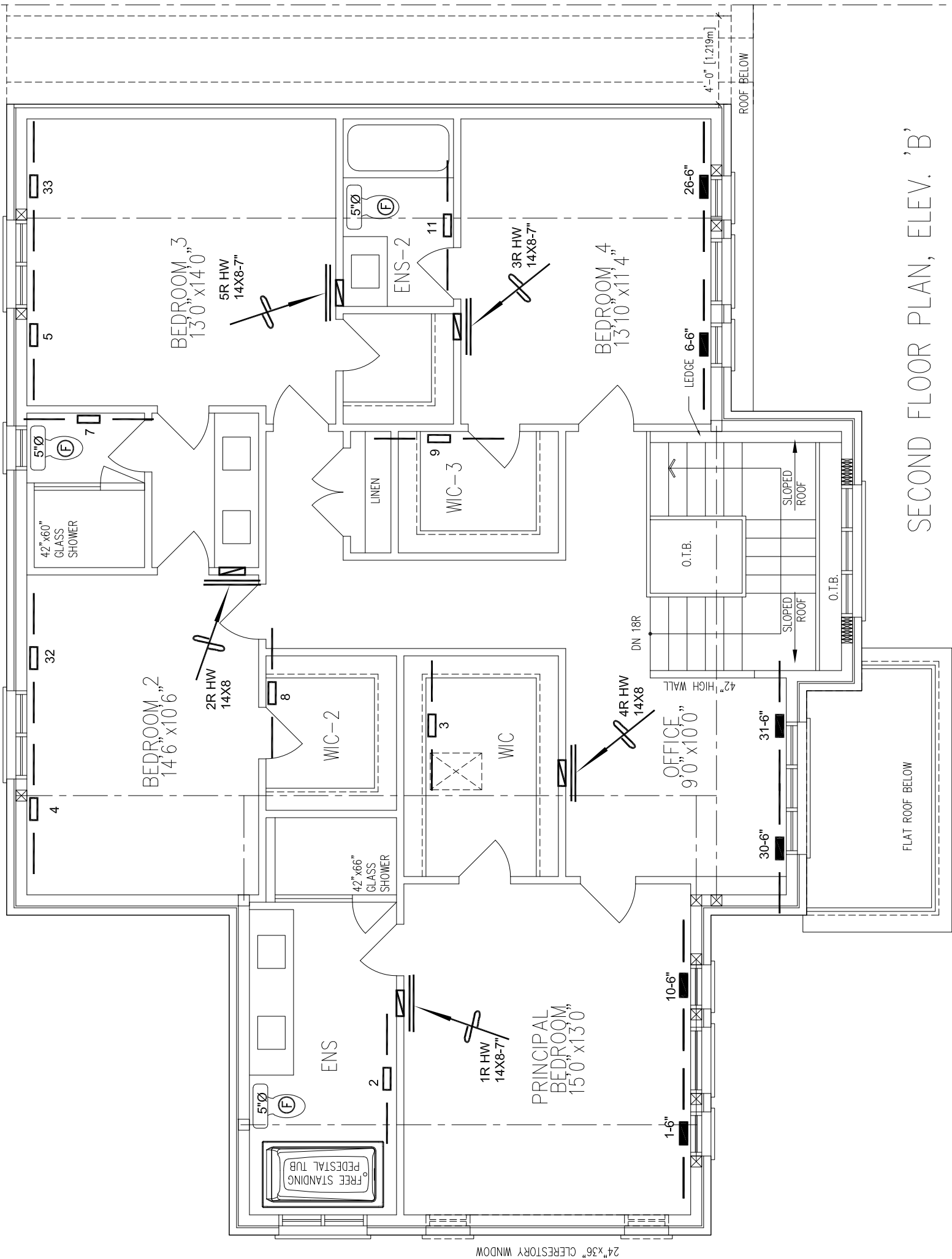
BASEMENT PLAN, ELEV. 'B' W/ LOGGIA

CSA-F280-12
PACKAGE A1

HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	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	HEAT LOSS 62776 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title BASEMENT HEATING LAYOUT	
Project Name PINE VALLEY DRIVE VAUGHAN, ONTARIO			MAKE LENNOX	2ND FLOOR	16	5	3		
			MODEL ML196UH070XE48B-70	1ST FLOOR	10	2	2		
			INPUT 66 MBTU/H	BASEMENT	7	1	0		
3106 MOD2935 sqft			OUTPUT 63.9 MBTU/H	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 JUNE/2022
		COOLING 4.0 TONS						Scale 3/16" = 1'-0"	
							BCIN# 19669		
							LO#97838		



SECOND FLOOR PLAN, ELEV. 'B'

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

CSA-F280-12
PACKAGE A1

HVAC LEGEND								3.		
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GOLD PARK HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	JUNE/2022
PINE VALLEY DRIVE VAUGHAN, ONTARIO			Scale	3/16" = 1'-0"
3106 MOD			BCIN# 19669	
2935 sqft			LO#	97838