

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: 5010 - OAKWOOD WOB Project: PINE VALLEY PH 2	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u> declare that (choose one as appropriate): (print name)			
☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____			
☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>			
☐ The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.			
April 14, 2022 _____ Date		 _____ Signature of Designer	

NOTE:

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

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

SITE NAME: PINE VALLEY PH 2										WOB		DATE: Apr-22		WINTER NATURAL AIR CHANGE RATE 0.416						HEAT LOSS ΔT °F. 76		CSA-F280-12									
BUILDER: GOLD PARK HOMES										TYPE: 5010 - OAKWOOD		GFA: 3633		LO# 96126		SUMMER NATURAL AIR CHANGE RATE 0.139						HEAT GAIN ΔT °F. 13		SB-12 PACKAGE A1							
ROOM USE				PBR				ENS				BED-2		BED-3		BED-4		BATH		WIC-4		LOFT		ENS-2							
EXP. WALL				44				11				14		34		21		13		13		12		16							
CLG. HT.				11				11				11		9		9		9		9		9		11							
FACTORS																															
GRS.WALL AREA		LOSS GAIN		484		121				154		306		189		117		117		108		176									
GLAZING				LOSS GAIN		LOSS GAIN				LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN									
NORTH		21.3	15.1	0	0	0	30	638	453		20	426	302	17	362	257	0	0	0	9	192	136	0	0	0	0	0	0	0	0	
EAST		21.3	38.8	0	0	0	0	0	0		0	0	0	0	0	0	68	1447	2641	0	0	0	0	0	0	0	0	0	0	0	
SOUTH		21.3	23.1	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	23	489	532	0	0	0	0	0	
WEST		21.3	38.4	54	1149	2073	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	16	596	1625	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	0	0	
NET EXPOSED WALL		4.5	0.8	430	1919	323	91	406	68		134	598	101	289	1290	217	121	540	91	108	482	81	117	522	88	85	379	64	166	741	125
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
EXPOSED CLG		1.3	0.6	320	411	188	120	154	71		0	0	0	274	352	161	100	128	59	95	122	56	45	58	26	369	474	217	0	0	0
NO ATTIC EXPOSED CLG		2.7	1.3	0	0	0	0	0	0		0	0	0	0	0	0	160	440	201	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	260	663	112	50	128	21	45	115	19	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0		0		0		0		0		0		0		0		0		0		0		0		0		0	
SLAB ON GRADE HEAT LOSS				0		0		0		0		0		0		0		0		0		0		0		0		0		0	
SUBTOTAL HT LOSS				3479		1199				1024		2003		3218		923		695		1938		954									
SUB TOTAL HT GAIN				2584		592				402		635		3104		294		134		2437		276									
LEVEL FACTOR / MULTIPLIER		0.30	0.42			0.30	0.42			0.30	0.42	0.20	0.89	0.20	0.89	0.20	0.89	0.20	0.89	0.20	0.89	0.30	0.42								
AIR CHANGE HEAT LOSS				1469		506				432		1786		2869		823		619		1728		403									
AIR CHANGE HEAT GAIN				187		43				29		46		225		21		10		176		20									
DUCT LOSS				0		0				0		0		609		175		131		0		0									
DUCT GAIN				0		0				0		0		415		90		73		0		0									
HEAT GAIN PEOPLE		240		2	480	0	0			1	240	1	240	1	240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS				584		584				584		584		584		584		584		584		584									
TOTAL HT LOSS BTU/H				4947		1704				1456		3789		6696		1920		1445		3666		1356									
TOTAL HT GAIN x 1.3 BTU/H				4985		1583				1632		1956		5938		1286		1040		4156		1143									

ROOM USE			DIN			FM/BR			KIT			LIB						PWD			FOY			MUD									WOB			BAS		
EXP. WALL			26			48			13			29						6			19			8									62			174		
CLG. HT.			16			16			11			14						11			20			12									10			10		
FACTORS			LOSS			GAIN																																
GRS.WALL AREA	LOSS		416			768			143			406			66			380			96									620			1218					
GLAZING	LOSS		GAIN			LOSS			GAIN			LOSS			GAIN			LOSS		GAIN		LOSS		GAIN		LOSS		GAIN		LOSS		GAIN		LOSS		GAIN		
NORTH	21.3	15.1	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	3	64	45						
EAST	21.3	38.8	0	0	0	0	0	0	0	0	0	0	105	2234	4078	0	0	0	73	1553	2835	0	0	0	0	0	0	0	0	0	0	0						
SOUTH	21.3	23.1	50	1064	1156	23	489	532	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	128	139							
WEST	21.3	38.4	0	0	0	221	4703	8484	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	20.1	3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	802	135	20	401	68	0	0	0	0	0	0	0	0						
NET EXPOSED WALL	4.5	0.8	366	1633	275	524	2338	394	143	638	107	301	1343	226	66	295	50	267	1192	201	76	339	57	496	2214	373	0	0	0	0	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	0	0	522	1878	316							
EXPOSED CLG	1.3	0.6	170	218	100	595	764	350	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
NO ATTIC EXPOSED CLG	2.7	1.3	120	330	151	0	0	0	0	0	0	200	550	252	0	0	0	95	261	120	0	0	0	0	0	0	0	0	0	0	0	0	0					
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
BASEMENT/CRAWL HEAT LOSS																																						
SLAB ON GRADE HEAT LOSS																																						
SUBTOTAL HT LOSS																																						
SUB TOTAL HT GAIN																																						
LEVEL FACTOR / MULTIPLIER			0.30	0.42		0.30	0.42		0.30	0.42		0.30	0.42		0.30	0.42		0.30	0.42		0.30	0.42		0.30	0.42													
AIR CHANGE HEAT LOSS																																						
AIR CHANGE HEAT GAIN																																						
DUCT LOSS																																						
DUCT GAIN																																						
HEAT GAIN PEOPLE	240		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
HEAT GAIN APPLIANCES/LIGHTS																																						
TOTAL HT LOSS BTU/H																																						
TOTAL HT GAIN x 1.3 BTU/H																																						

TOTAL HEAT GAIN BTU/H:

61063

TONS: 5.09

LOSS DUE TO VENTILATION LOAD BTU/H: 1631

STRUCTURAL HEAT LOSS: 87942

TOTAL COMBINED HEAT LOSS BTU/H: 89574



SITE NAME: PINE VALLEY PH 2
BUILDER: GOLD PARK HOMES

WOB
TYPE: 5010 - OAKWOOD

DATE: Apr-22

GFA: 3633 LO# 96126

HEATING CFM 1995 COOLING CFM 1995
TOTAL HEAT LOSS 87,942 TOTAL HEAT GAIN 60,789
AIR FLOW RATE CFM 22.69 AIR FLOW RATE CFM 32.82

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

\$LENNOX

AFUE = 96 %

ML196UH110XE60C 110

INPUT (BTU/H) = 110,000

FAN SPEED

OUTPUT (BTU/H) = 107,200

LOW 0

DESIGN CFM = 1995

MEDLOW 1420

CFM @ .6" E.S.P.

MEDIUM 1550

MEDIUM HIGH 1725

HIGH 1995

TEMPERATURE RISE 50 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	7	21	9
R/A	0	0	3	5	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	PBR	ENS	ENS	BED-2	BED-3	BED-4	BATH	WIC-4	LOFT	PBR	ENS-2	DIN	FM/BR	KIT	FM/BR	LIB	LIB	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.47	0.85	0.85	1.46	3.79	3.35	1.92	1.45	1.83	2.47	1.36	2.31	2.36	0.91	2.36	1.96	1.96	0.42	2.71	1.05	3.43	3.43	3.43	3.43
CFM PER RUN HEAT	56	19	19	33	86	76	44	33	42	56	31	52	54	21	54	44	44	10	61	24	78	78	78	78
RM GAIN MBH.	2.49	0.79	0.79	1.63	1.96	2.97	1.29	1.04	2.08	2.49	1.14	1.55	2.87	0.91	2.87	2.37	2.37	0.07	2.29	0.17	0.75	0.75	0.75	0.75
CFM PER RUN COOLING	82	26	26	54	64	97	42	34	68	82	38	51	94	30	94	78	78	2	75	6	25	25	25	25
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	51	28	18	8	29	54	25	52	68	40	8	50	62	34	61	64	70	17	50	10	61	64	12	49
EQUIVALENT LENGTH	100	140	160	90	200	140	180	150	160	110	160	150	140	170	110	110	160	120	150	140	110	110	90	130
TOTAL EFFECTIVE LENGTH	151	168	178	98	229	194	205	202	228	150	168	200	202	204	171	174	230	137	200	150	171	174	102	179
ADJUSTED PRESSURE	0.11	0.1	0.1	0.18	0.07	0.08	0.08	0.09	0.08	0.11	0.1	0.09	0.08	0.08	0.09	0.1	0.07	0.13	0.09	0.11	0.1	0.1	0.17	0.1
ROUND DUCT SIZE	6	4	4	6	6	6	5	4	6	6	4	5	6	4	6	6	6	4	6	4	5	6	5	5
HEATING VELOCITY (ft/min)	286	218	218	168	438	388	323	379	214	286	356	382	275	241	275	224	224	115	311	275	573	398	573	573
COOLING VELOCITY (ft/min)	418	298	298	275	326	495	308	390	347	418	436	374	479	344	479	398	398	23	382	69	184	127	184	184
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	4X10	3X10	3X10	4X10	3X10	3X10
TRUNK	A	A	C	D	G	G	G	G	E	A	G	E	B	F	C	F	E	G	F	G	C	A	D	F

RUN #	25	26	27	28	29	30	31	32	33	34	35	36	37
ROOM NAME	BAS	BAS	BAS	BED-4	LOFT	DIN	FM/BR	FM/BR	FM/BR	FOY	LIB	BAS	BAS
RM LOSS MBH.	3.43	3.43	3.43	3.35	1.83	2.31	2.36	2.36	2.36	2.71	1.96	3.43	3.43
CFM PER RUN HEAT	78	78	78	76	42	52	54	54	54	61	44	78	78
RM GAIN MBH.	0.75	0.75	0.75	2.97	2.08	1.55	2.87	2.87	2.87	2.29	2.37	0.75	0.75
CFM PER RUN COOLING	25	25	25	97	68	51	94	94	94	75	78	25	25
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	49	58	48	52	72	56	72	72	48	58	67	48	83
EQUIVALENT LENGTH	170	150	130	120	170	160	140	140	110	130	180	130	180
TOTAL EFFECTIVE LENGTH	219	208	178	172	242	216	212	212	158	188	247	178	263
ADJUSTED PRESSURE	0.08	0.08	0.1	0.09	0.07	0.08	0.08	0.08	0.1	0.09	0.07	0.1	0.07
ROUND DUCT SIZE	6	6	5	6	6	5	6	6	6	6	6	6	6
HEATING VELOCITY (ft/min)	398	398	573	388	214	382	275	275	275	311	224	398	398
COOLING VELOCITY (ft/min)	127	127	184	495	347	374	479	479	479	382	398	127	127
OUTLET GRILL SIZE	4X10	4X10	3X10	4X10	4X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10	4X10
TRUNK	E	B	C	G	E	E	B	B	C	F	E	A	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	287	0.10	8.3	8	x	8	646	TRUNK G	999	0.07	14.5	24	749
TRUNK B	318	0.07	9.4	10	x	8	572	TRUNK H	0	0.00	0	0	0
TRUNK C	601	0.07	12	16	x	8	676	TRUNK I	0	0.00	0	0	0
TRUNK D	999	0.07	14.5	24	x	8	749	TRUNK J	0	0.00	0	0	0
TRUNK E	354	0.07	9.8	12	x	8	531	TRUNK K	0	0.00	0	0	0
TRUNK F	619	0.07	12.1	18	x	8	619	TRUNK L	0	0.00	0	0	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	1995	0.05	20.4	36	x	12	665
TRUNK Y	1115	0.05	16.4	32	x	8	627
TRUNK Z	475	0.05	11.9	16	x	8	534
DROP	1995	0.05	20.4	24	x	18	665

RETURN AIR #	1	2	3	4	5	6	7	8							BR
AIR VOLUME	280	200	115	145	360	360	115	75	0	0	0	0	0	0	345
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.	48	43	37	54	42	39	62	31	1	1	1	1	1	1	14
EQUIVALENT LENGTH	225	215	255	155	200	225	215	295	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	273	258	292	209	242	264	277	326	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.05	0.06	0.05	0.07	0.06	0.06	0.05	0.05	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	9.8	8.2	7	7	10.3	10.3	7	6	0	0	0	0	0	0	8.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	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	30	24	14	14	30	30	14	14	0	0	0	0	0	0	30

TYPE: 5010 - OAKWOOD
SITE NAME: PINE VALLEY PH 2

LO # 96126
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	<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
PWD	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	☒ HVI Approved	
@ 32 deg F (0 deg C)		

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

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

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

DESIGNER CERTIFICATION	
I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.	
Name:	HVAC Designs Ltd.
Signature:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	April-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#: 96126	Model: 5010 - OAKWOOD	Builder: GOLD PARK HOMES	Date: 2022-04-14																																																									
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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>2384</td><td>10</td><td>23840</td></tr> <tr><td>First</td><td>2384</td><td>11</td><td>26224</td></tr> <tr><td>Second</td><td>2125</td><td>9</td><td>19125</td></tr> <tr><td>Third</td><td>0</td><td>9</td><td>0</td></tr> <tr><td>Fourth</td><td>0</td><td>9</td><td>0</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>69,189.0 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>1959.2 m³</td></tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	2384	10	23840	First	2384	11	26224	Second	2125	9	19125	Third	0	9	0	Fourth	0	9	0	Total:			69,189.0 ft³	Total:			1959.2 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%;">0.416</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.139</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>22</td> <td>-20</td> <td>42</td> <td>76</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>31</td> <td>7</td> <td>13</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.416	SUMMER NATURAL AIR CHANGE RATE	0.139	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																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.416 x 544.23 x 42 °C x 1.2 = 11467 W = 39126 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.139 x 544.23 x 7 °C x 1.2 = 648 W = 2209 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)																																																												
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				Michael O'Rourke BCIN# 19669 																																																								

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5010 - OAKWOOD	WOB	BUILDER: GOLD PARK HOMES
SFQT: 3633	LO# 96126	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):	69189.0	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:	7.0 ft
LENGTH: 76.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	174.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	62.0 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/ERV Minimum Efficiency		75%	-
Domestic Hot Water Heater Minimum EF		0.8	-

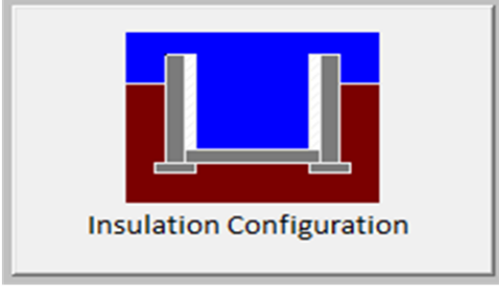
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

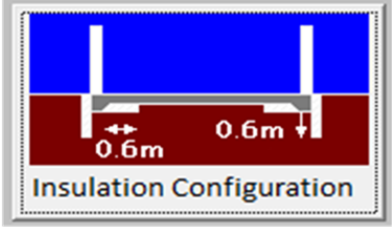
Weather Station Description		
Province:	Ontario	
Region:	Vaughan (Woodbridge)	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	6.1	
Floor Width (m):	12.8	
Exposed Perimeter (m):	53.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	1.87	
Window Area (m ²):	0.8	
Door Area (m ²):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		910

TYPE: 5010 - OAKWOOD
LO# 96126

WOB

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):	3.0	
Width (m):	12.8	
Exposed Perimeter (m):	18.9	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		276

TYPE: 5010 - OAKWOOD
LO# 96126

WOB

Air Infiltration Residential Load Calculator

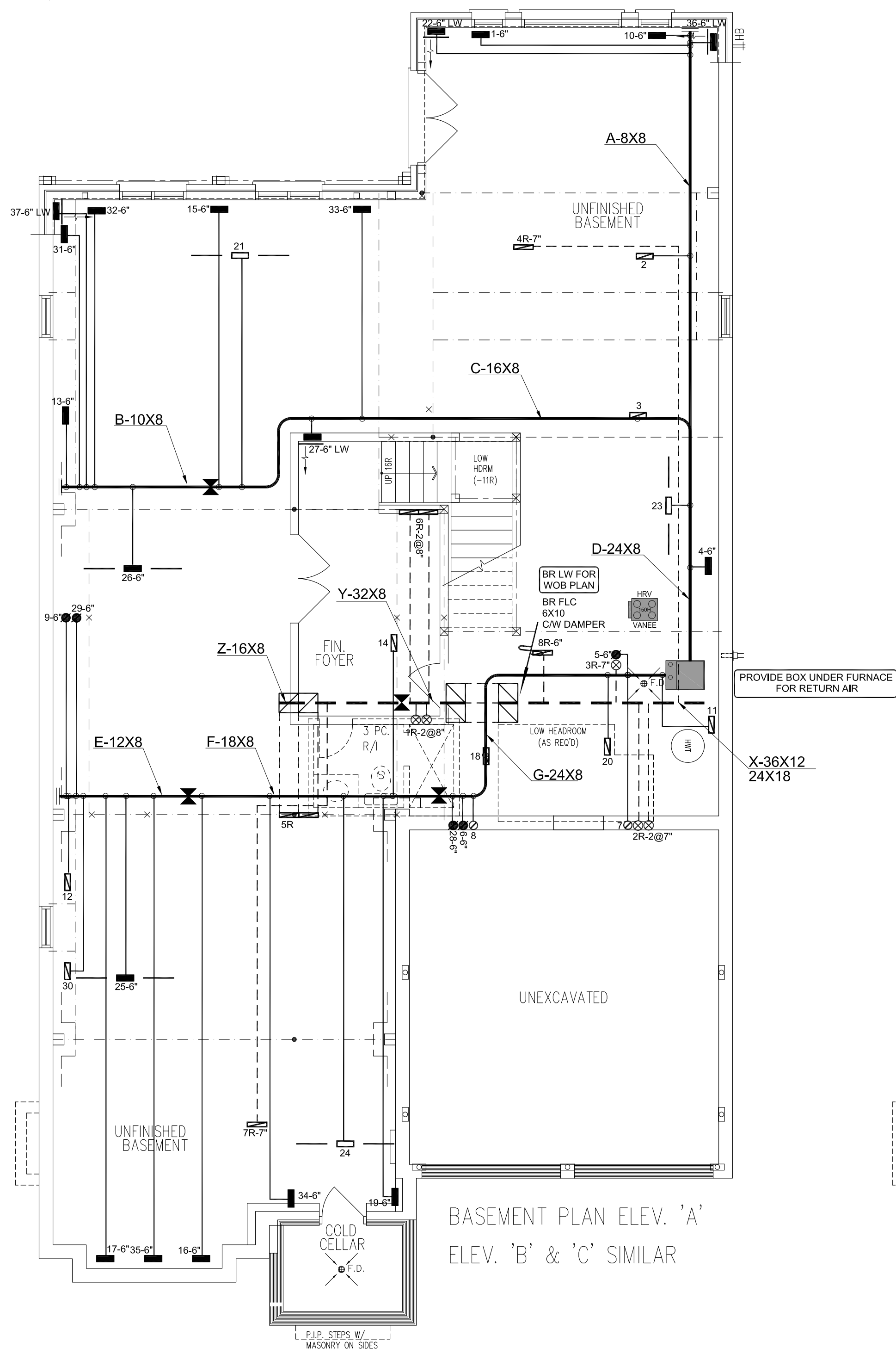
Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Vaughan (Woodbridge)			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	9.45			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1959.2			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	2611.7 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):	0.416			
Cooling Air Leakage Rate (ACH/H):	0.139			

TYPE: 5010 - OAKWOOD
LO# 96126

WOB

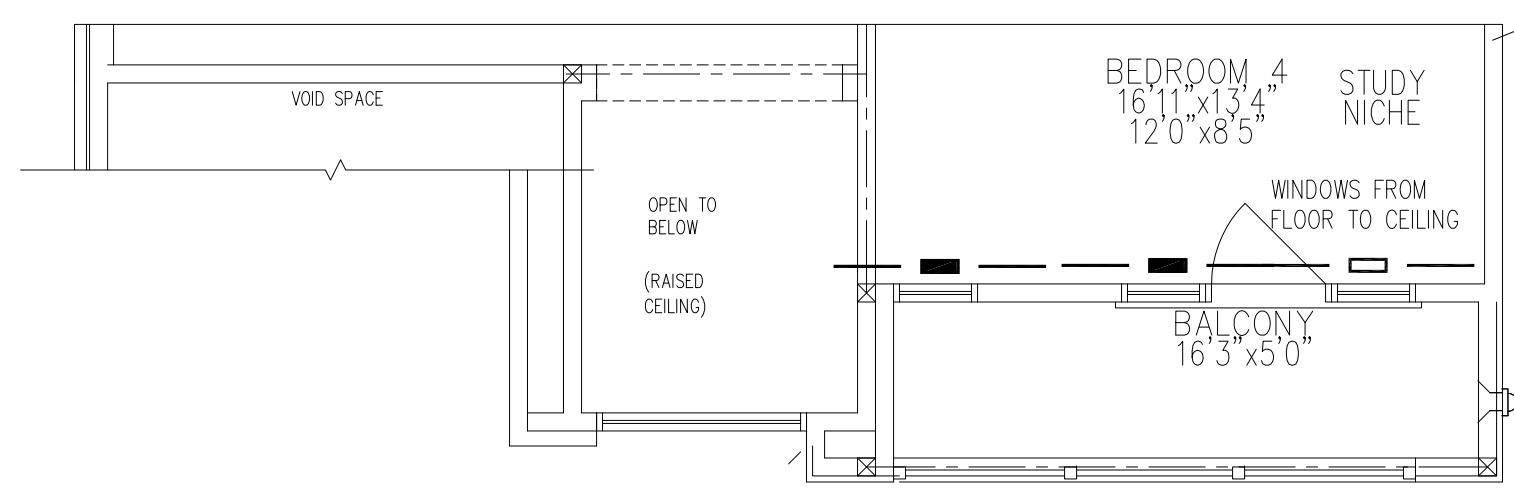
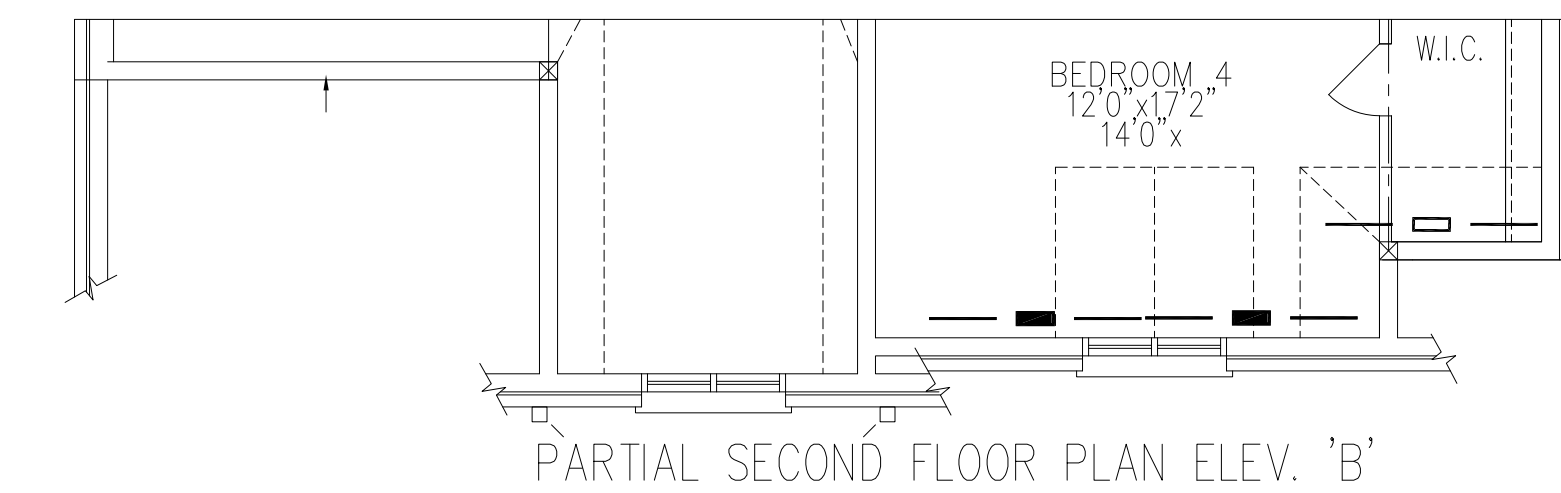
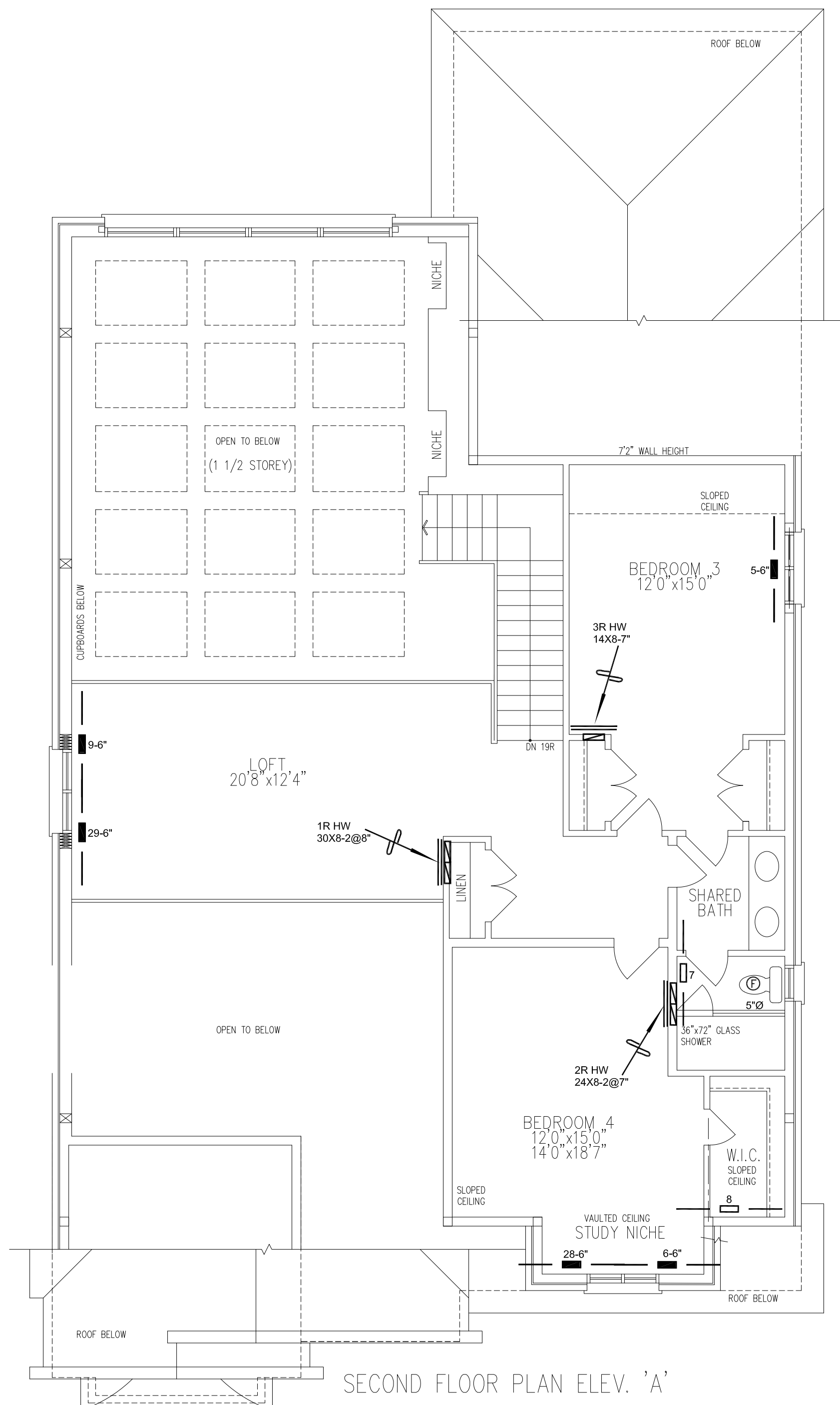
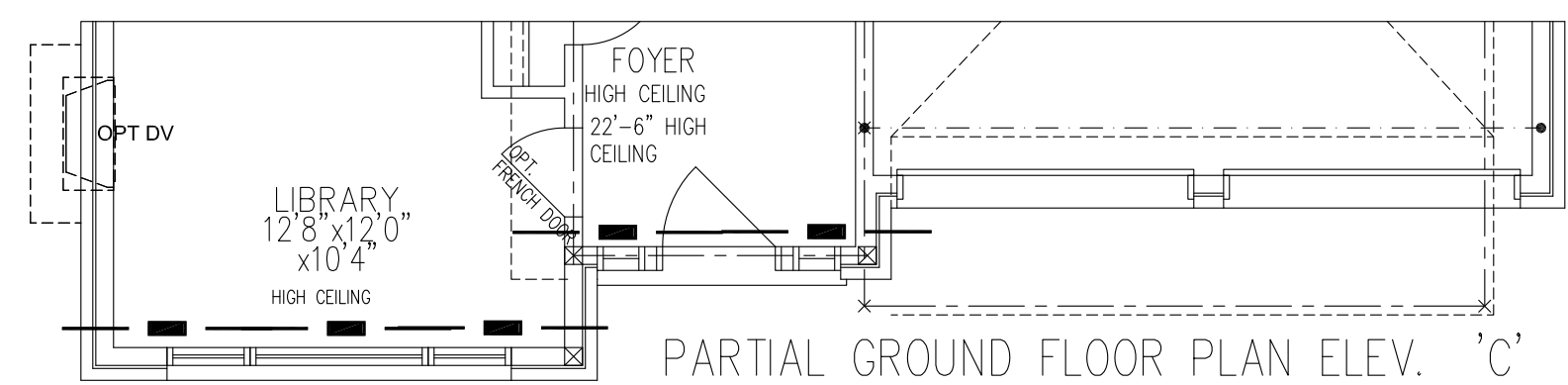
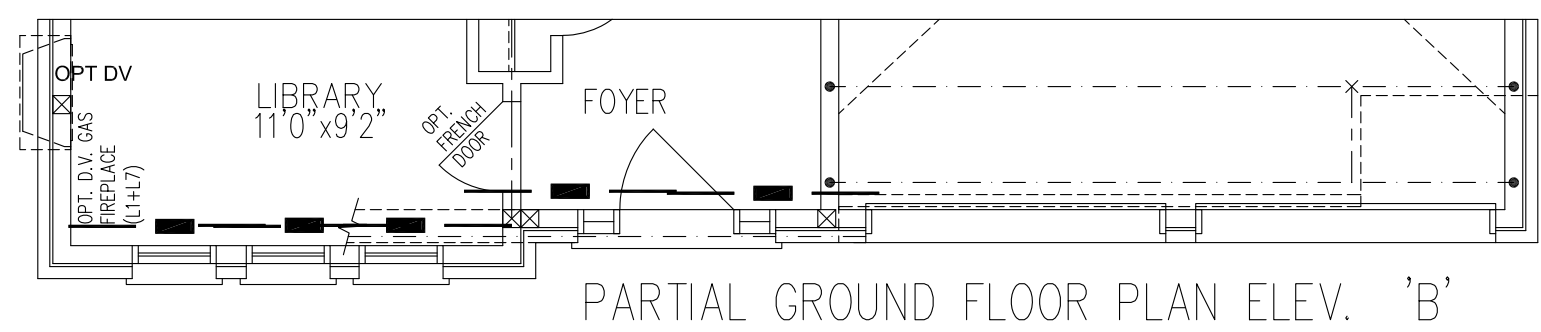
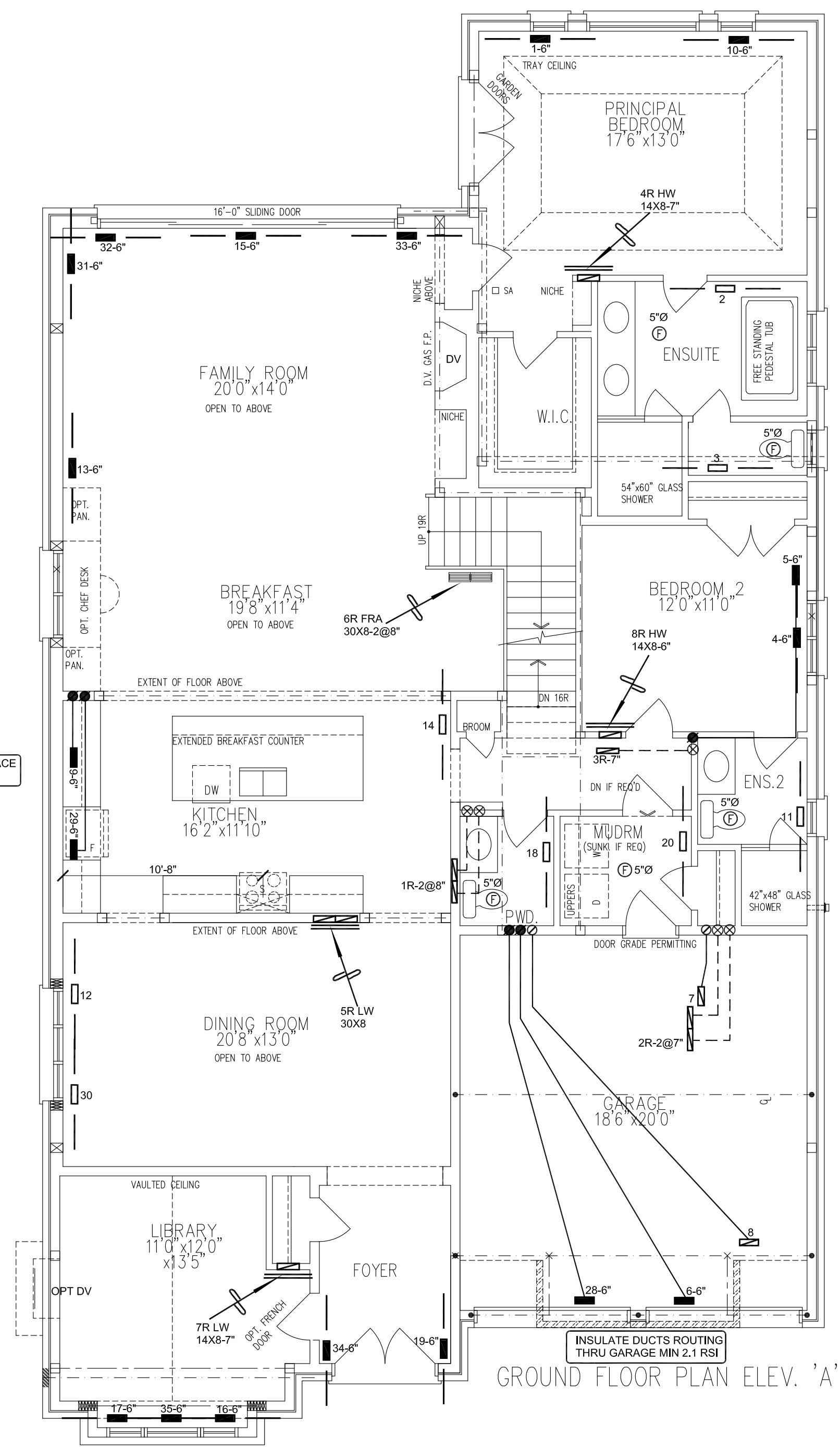
HEAT LOSS 89574 BTU/H		# OF RUNS	S/A	R/A	FANS
UNIT DATA					
MAKE	LENNOX	3RD FLOOR			
		2ND FLOOR	7	3	1
MODEL	ML96UH110XE60C	1ST FLOOR			
		21	5	6	
INPUT	110 MBTU/H	BASEMENT			
		9	1	0	
OUTPUT	107.2 MBTU/H	ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE			
COOLING	50.5 TONS	ON LAYOUT, ALL S/A RUNS 50' UNLESS NOTED OTHERWISE			
FAN SPEED	1995 cfm @ 0.6" w.c.	ON LAYOUT, UNDER FLOOR DOORS 1" min. FOR R/A			



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INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. ALL SUPPLY BRANCH OUTLETS SHALL BE EQUIPPED WITH MANUAL BALANCING DAMPER. DUCTWORK WHICH PASSES THROUGH THE GARAGE OR UNHEATED SPACES SHALL BE ADEQUATELY INSULATED AND GAS-PROOFED

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



HVAC LEGEND	
	4X10 SUPPLY GRILLE
	14X9 RETURN GRILLE
	4X10 SUPPLY GRILLE 6"Ø BOOT
	30X36 RETURN GRILLE
	SUPPLY DUCTWORK
	RETURN DUCTWORK
	EXHAUST FAN
LW	LOW WALL
HW	HIGH WALL

MICHAEL O'DOURKE HAS REVIEWED AND TAKES RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

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

2			
1	ISSUED FOR PERMIT	APRIL 2022	JC
No.	Revision	Date	By

SB-12 PACKAGE

A1

HVAC DESIGNS LTD.

375 Finley Ave - Unit 202 - Ajax, Ontario L1S 2E2
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Email: info@hvacadesigns.ca
Web: www.hvacadesigns.ca
Specializing in Residential Mechanical Design Services

Client **GOLDPARK HOMES**

Project Name PINE VALLEY PH2

VAUGHAN, C.
5010. 04

5010 - OAKWOOD - 1
3633 SQFT

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Street Title	MECHANICAL
Drawn	JG

By	JC
Scale	3/16"=1'-0"

Date APRIL 2022

96126

1