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:** 5001 - THE HILLSBOROUGH ELEVATION B **Project:** PINE VALLEY & TESTON

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.

January 24, 2018
Date

Michael O'Rourke
Signature of Designer

NOTE:

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

HVAC DESIGNS LTD.

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SITE NAME: PINE VALLEY & TESTON — ELEVATION B — DATE: Jan-18 — WINTER NATURAL AIR CHANGE RATE 0.330 — HEAT LOSS ΔT °F. 76 — CSA-F280-12
BUILDER: GOLD PARK HOMES — TYPE: 5001 - THE HILLSBOROUGH — GFA: 3602 — LO# 77472 — SUMMER NATURAL AIR CHANGE RATE 0.114 — HEAT GAIN ΔT °F. 14 — SB-12 PACKAGE A1

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			BATH					ENS-4					
EXP. WALL			41			25			10			11			37			20			7					6					
CLG. HT.			10			9			9			9			9			9			9					9					
	FACTORS																														
GRS.WALL AREA	LOSS	GAIN	410			225			90			99			333			180			63					54					
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN				LOSS	GAIN			
NORTH	21.3	16.3	0	0	0	0	0	0	0	0	0	17	362	276	0	0	0	0	0	0	8	170	130			0	0	0			
EAST	21.3	41.8	0	0	0	0	0	0	0	0	0	0	0	0	37	787	1548	0	0	0	0	0	0			0	0	0			
SOUTH	21.3	25.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	702	831	0	0	0			8	170	201			
WEST	21.3	41.8	38	809	1590	28	596	1171	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0			
SKYLT.	37.2	102.0	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	4.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0			
NET EXPOSED WALL	4.5	0.8	372	1660	301	197	879	160	90	402	73	82	366	66	296	1321	240	147	656	119	55	245	45			46	205	37			
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.7	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	206	156	200	94	120	154	73	242	311	146	260	334	157	420	539	254	147	189	89			120	154	73			
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0	0	0	0	0	40	110	52	0	0	0	0	0	0			0	0	0			
EXPOSED FLOOR	2.6	0.5	0	0	0	0	0	0	0	0	0	0	0	0	300	765	139	0	0	0	108	275	50			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				2905			1675			556			1038			3317			1897			880					530				
SUB TOTAL HT GAIN					2097			1425			145			489			2136			1204			313					311			
LEVEL FACTOR / MULTIPLIER			0.20	0.31		0.20	0.31		0.20	0.31		0.20	0.31		0.20	0.31		0.20	0.31		0.20	0.31				0.20	0.31				
AIR CHANGE HEAT LOSS				911			525			174			325			1040			595			276					166				
AIR CHANGE HEAT GAIN					186			126			13			43			189			107			28					28			
DUCT LOSS				0			0			0			0			436			0			116					0				
DUCT GAIN					0			0			0			0			332			0			34					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					751			0			0			751			751			751			0					0			
TOTAL HT LOSS BTU/H				3816			2200			730			1364			4792			2492			1271					696				
TOTAL HT GAIN x 1.3 BTU/H					4568			2017			206			1981			4742			2992			488					440			

ROOM USE			LIB				KT/GT			DIN			LAUN			W/R			FOY			MUD					BAS				
EXP. WALL			32				65			20			23			5			42			26					196				
CLG. HT.			10				10			10			9			10			10			11					9				
	FACTORS																														
GRS.WALL AREA	LOSS	GAIN	320				650			200			207			50			420			286					1176				
GLAZING				LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN				LOSS	GAIN		
NORTH	21.3	16.3	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			16	340	260		
EAST	21.3	41.8	52	1107	2175		0	0	0	0	0	0	28	596	1171	0	0	0	26	553	1088	0	0	0			0	0	0		
SOUTH	21.3	25.2	0	0	0		0	0	0	34	724	856	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0		
WEST	21.3	41.8	0	0	0		150	3192	6275	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0		
SKYLT.	37.2	102.0	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	4.6	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	50	1262	229	20	505	92			20	505	92		
NET EXPOSED WALL	4.5	0.8	268	1196	217		500	2231	405	166	741	135	179	799	145	50	223	41	344	1535	279	266	1187	216			0	0	0		
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.7	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			588	2116	384		
EXPOSED CLG	1.3	0.6	60	77	36		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		0	0	0	0	0	0	0	0	0	0	0	0	60	165	78	0	0	0			0	0	0		
EXPOSED FLOOR	2.6	0.5	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0		
BASEMENT/CRAWL HEAT LOSS				0				0			0			0			0			0			0					6748			
SLAB ON GRADE HEAT LOSS				0				0			0			0			0			0			0								
SUBTOTAL HT LOSS				2380				5423			1464			1395			223			3516			1692					9710			
SUB TOTAL HT GAIN					2429				6680			991			1316			41			1673			307						736		
LEVEL FACTOR / MULTIPLIER			0.30	0.45			0.30	0.45		0.30	0.45		0.20	0.31		0.30	0.45		0.30	0.45		0.30	0.45				0.50	1.15			
AIR CHANGE HEAT LOSS				1080				2462			665			437			101			1596			768					11122			
AIR CHANGE HEAT GAIN					215				591			88			117			4			148			27						65		
DUCT LOSS				0				0			0			0			0			0			0					0			
DUCT GAIN					0				0			0			0			0			0			0						0		
HEAT GAIN PEOPLE	240		0		0		0		0	0		0	0		0	0		0	0		0	0		0			0			0		
HEAT GAIN APPLIANCES/LIGHTS					751				751			751			751			0			0			751						0		
TOTAL HT LOSS BTU/H				3460				7886			2129			1832			324			5112			2460					20831			
TOTAL HT GAIN x 1.3 BTU/H					4414				10429			2379			2840			57			2368			1412						1041		

TOTAL HEAT GAIN BTU/H: 42951 — TONS: 3.58 — LOSS DUE TO VENTILATION LOAD BTU/H: 3181 — STRUCTURAL HEAT LOSS: 61395 — TOTAL COMBINED HEAT LOSS BTU/H: 64575

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

Michael O'Rourke

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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SITE NAME: PINE VALLEY & TESTON
BUILDER: GOLD PARK HOMES

ELEVATION B
TYPE: 5001 - THE HILLSBOROUGH DATE: Jan-18 GFA: 3602 LO# 77472

HEATING CFM	1255	COOLING CFM	1255
TOTAL HEAT LOSS	61.395	TOTAL HEAT GAIN	42.374
AIR FLOW RATE CFM	20.44	AIR FLOW RATE CFM	29.62

furnace pressure	0.6
furnace filter	0.05
a/c coil pressure	0.2
available pressure for s/a & r/a	0.35
plenum pressure s/a	0.18
max s/a dif press. loss	0.02
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

^LENNOX
EL296UH090XE48C 90

FAN SPEED	
LOW	0
MEDLOW	0
MEDIUM	1105
MEDIUM HIGH	1255
HIGH	1525

AFUE = 96 %
INPUT (BTU/H) = 88,000
OUTPUT (BTU/H) = 85,000
DESIGN CFM = 1255 CFM @ .6 " E.S.P.
TEMPERATURE RISE 63 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	12	9	5
R/A	0	0	4	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-2	BED-3	BED-4	BATH	BED-3	BATH	MBR	ENS-4	LIB	LIB	KT/GT	KT/GT	DIN	LAUN	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.91	2.20	0.73	1.36	2.40	2.49	0.64	2.40	0.64	1.91	0.70	1.73	1.73	2.63	2.63	2.13	1.83	0.32	5.11	2.46	4.17	4.17	4.17	4.17
CFM PER RUN HEAT	39	45	15	28	49	51	13	49	13	39	14	35	35	54	54	44	37	7	104	50	85	85	85	85
RM GAIN MBH.	2.28	2.02	0.21	1.98	2.37	2.99	0.24	2.37	0.24	2.28	0.44	2.21	2.21	3.48	3.48	2.38	2.84	0.06	2.37	1.41	0.21	0.21	0.21	0.21
CFM PER RUN COOLING	68	60	6	59	70	89	7	70	7	68	13	65	65	103	103	70	84	2	70	42	6	6	6	6
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.16	0.17	0.16	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	64	49	31	31	49	48	30	45	26	75	48	50	45	50	37	29	50	5	31	11	40	28	29	47
EQUIVALENT LENGTH	205	165	110	135	125	180	145	105	165	205	220	120	120	120	120	190	160	100	150	170	120	190	160	160
TOTAL EFFECTIVE LENGTH	269	214	141	166	174	228	175	150	191	280	268	170	165	170	157	219	210	105	181	181	160	218	189	207
ADJUSTED PRESSURE	0.06	0.08	0.12	0.1	0.1	0.07	0.1	0.11	0.09	0.06	0.06	0.1	0.1	0.1	0.1	0.08	0.08	0.16	0.09	0.1	0.1	0.07	0.09	0.08
ROUND DUCT SIZE	6	5	4	5	5	6	4	5	4	6	4	5	5	6	6	5	6	4	6	4	5	6	5	6
HEATING VELOCITY (ft/min)	199	330	172	206	360	260	149	360	149	199	161	257	257	275	275	323	189	80	530	574	624	433	624	433
COOLING VELOCITY (ft/min)	347	441	69	433	514	454	80	514	80	347	149	477	477	525	525	514	428	23	357	482	44	31	44	31
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	4X10	3X10	4X10	3X10	4X10	3X10	3X10	4X10	3X10	4X10
TRUNK	A	D	C	D	D	A	D	D	D	A	A	B	B	A	A	B	B	C	B	D	A	A	D	B

RUN #	25	26
ROOM NAME	BAS	KT/GT
RM LOSS MBH.	4.17	2.63
CFM PER RUN HEAT	85	54
RM GAIN MBH.	0.21	3.48
CFM PER RUN COOLING	6	103
ADJUSTED PRESSURE	0.16	0.16
ACTUAL DUCT LGH.	40	35
EQUIVALENT LENGTH	110	130
TOTAL EFFECTIVE LENGTH	150	165
ADJUSTED PRESSURE	0.11	0.1
ROUND DUCT SIZE	5	6
HEATING VELOCITY (ft/min)	624	275
COOLING VELOCITY (ft/min)	44	525
OUTLET GRILL SIZE	3X10	4X10
TRUNK	B	D

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	421	0.06	10.9	14	x	8	541	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	425	0.08	10.2	12	x	8	638	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	868	0.06	14.3	24	x	8	651	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	386	0.08	9.8	12	x	8	579	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1130	0.06	15.8	30	x	8	678
TRUNK Y	310	0.06	9.7	12	x	8	465
TRUNK Z	0	0.06	0	0	x	8	0
DROP	1255	0.06	16.4	24	x	12	628

RETURN AIR #	1	2	3	4	5	6										BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	110	155	155	125	340	175	0	0	0	0	0	0	0	0	0	195
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.	47	36	37	59	20	28	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	205	190	185	160	135	170	0	0	0	0	0	0	0	0	0	140
TOTAL EFFECTIVE LH	252	226	222	219	155	198	1	1	1	1	1	1	1	1	1	154
ADJUSTED PRESSURE	0.06	0.07	0.07	0.07	0.10	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	6.6	7.2	7.2	6.7	8.9	7.5	0	0	0	0	0	0	0	0	0	7.2
INLET GRILL SIZE	8	8	8	8	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
INLET GRILL SIZE	14	14	14	14	30	14	0	0	0	0	0	0	0	0	0	14

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: 5001 - THE HILLSBOROUGH LO # 77472
SITE NAME: PINE VALLEY & TESTON ELEVATION B

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	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.		TOTAL	190.8	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	190.8	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	35.8	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 65H Location: BSMT

155.0 cfm 3.0 sones [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

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

SUPPLEMENTAL FANS NUTONE

Location	Model	cfm	HVI	Sones
ENS	QTXEN050C	50	✓	0.3
BATH	QTXEN050C	50	✓	0.3
ENS-4	QTXEN050C	50	✓	0.3
W/R	QTXEN050C	50	✓	0.3

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE 65H

155 cfm high 64 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: January-18

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

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

HVAC DESIGNS LTD.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 77472 Model: 5001 - THE HILLSBOROUGH Builder: GOLD PARK HOMES Date: 2018-01-24

Volume Calculation

House Volume			
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1666	9	14994
First	1666	10	16660
Second	1993	9	17937
Third	0	9	0
Fourth	0	9	0
		Total:	49,591.0 ft³
		Total:	1404.3 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.330
SUMMER NATURAL AIR CHANGE RATE	0.114

Design Temperature Difference				
	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-20	42	76
Summer DTDc	23	31	8	14

5.2.3.1 Heat Loss due to Air Leakage

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

0.330 x 390.07 x 42 °C x 1.2 = 6519 W

= 22243 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

= 0.114 x 390.07 x 8 °C x 1.2 = 409 W

= 1396 Btu/h

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

155 CFM x 76 °F x 1.08 x 0.25 = 3181 Btu/h

6.2.7 Sensible heat Gain due to Ventilation

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

155 CFM x 14 °F x 1.08 x 0.25 = 578 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	22,243	9,710	1.145
2	0.3		14,698	0.454
3	0.2		14,193	0.313
4	0		0	0.000
5	0		0	0.000

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

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5001 - THE HILLSBOROUGH ELEVATION B **BUILDER:** GOLD PARK HOMES
SFQT: 3602 **LO#** 77472 **SITE:** PINE VALLEY & TESTON

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-4	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	74

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):	49591.0	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:	6.0 ft
LENGTH: 56.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	196.0 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

HVAC Designs Ltd.
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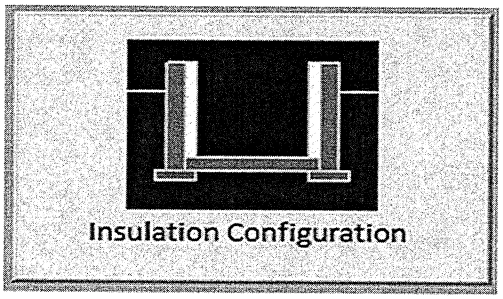
Ajax ON, L1S 2E2
905-619-2300

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):	17.1	 Insulation Configuration
Floor Width (m):	12.8	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m^2):	1.5	
Door Area (m^2):	1.9	

Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	

Design Months		
Heating Month	1	

Foundation Loads	
Heating Load (Watts):	**1977**

TYPE: 5001 - THE HILLSBOROUGH ELEVATION B
LO# 77472

HVAC Designs Ltd.
375 Finley Ave, Suite 202
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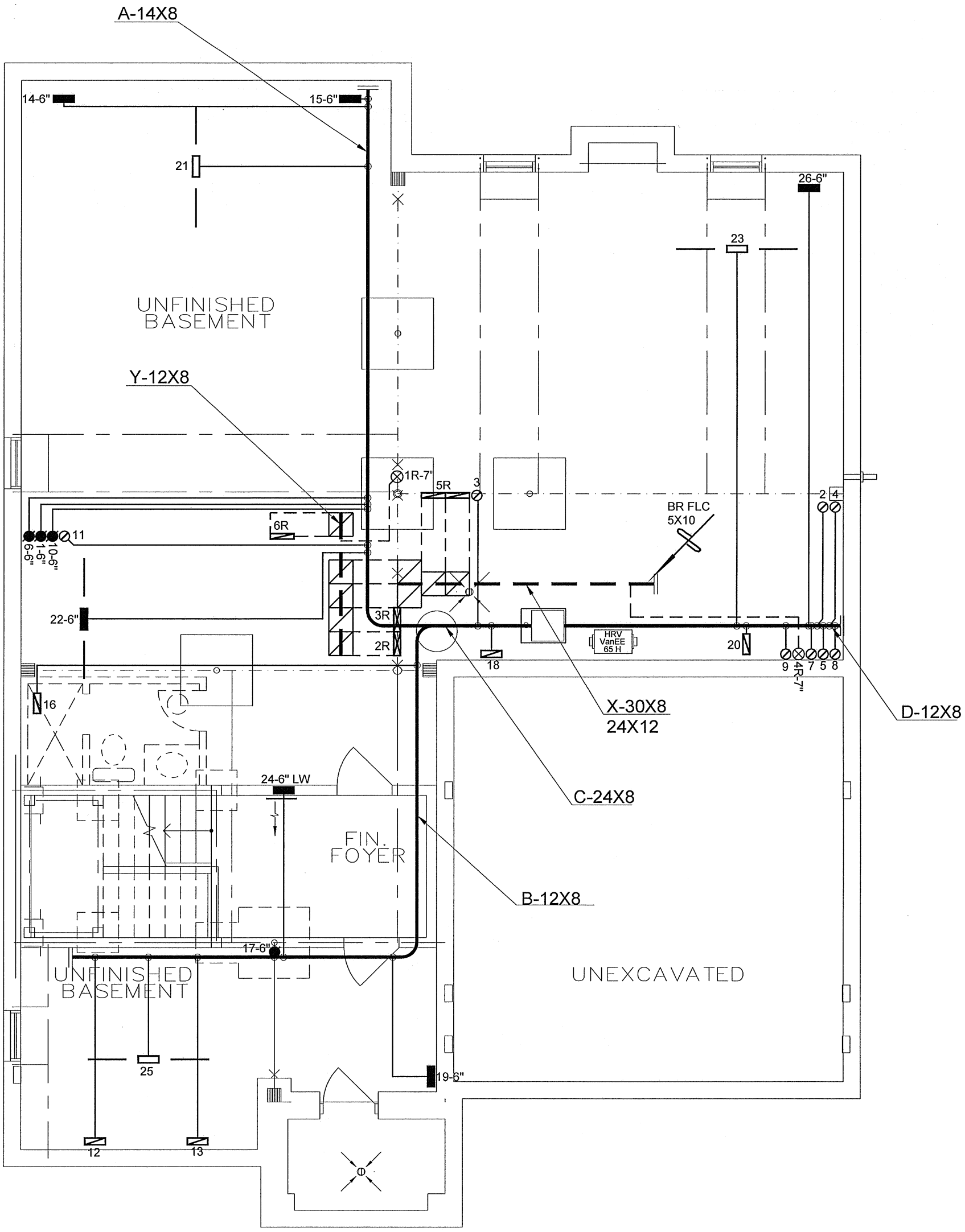
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Vaughan (Woodbridge)	
Weather Station Location:	Open flat terrain, grass	
Anemometer height (m):	10	
Local Shielding		
Building Site:	Suburban, forest	
Walls:	Heavy	
Flue:	Heavy	
Highest Ceiling Height (m):	6.71	
Building Configuration		
Type:	Detached	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m^3):	1404.3	
Air Leakage/Ventilation		
Air Tightness Type:	Present (1961-) (3.57 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1871.9 cm^2
	3.57	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust
	73.2	73.2
Flue Size		
Flue #:	#1 #2 #3 #4	
Diameter (mm):	0 0 0 0	
Natural Infiltration Rates		
Heating Air Leakage Rate (ACH/H):	**0.330**	
Cooling Air Leakage Rate (ACH/H):	**0.114**	

TYPE: 5001 - THE HILLSBOROUGH ELEVATION B
LO# 77472



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

CSA-F280-12

PACKAGE A1

HVAC LEGEND

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

No.	Description	Date
3.		
2.		
1.		

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Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO
ELEVATION B
THE HILLSBOROUGH
5001 3602 sqft

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

HEAT LOSS 64575 BTU/H		
UNIT DATA		
MAKE	LENNOX	
MODEL	EL296UH090XE48C	
INPUT	88	MBTU/H
OUTPUT	85	MBTU/H
COOLING	3.5	TONS
FAN SPEED	1255	cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	12	4	3
1ST FLOOR	9	2	2
BASEMENT	5	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

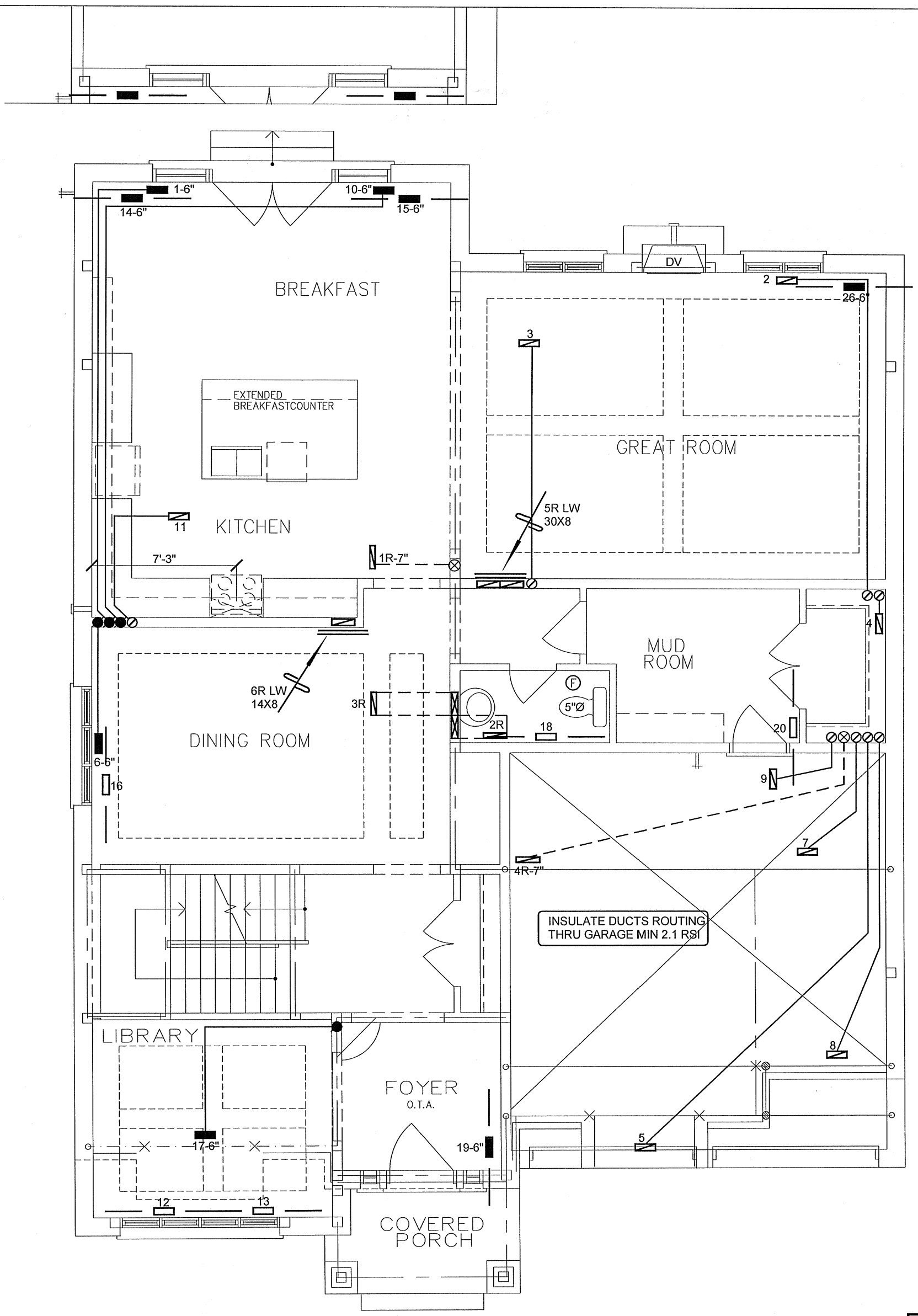
BASEMENT HEATING LAYOUT

Date JAN/2018

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 77472



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CSA-F280-12

PACKAGE A1

HVAC LEGEND

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	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

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Client
GOLD PARK HOMES

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THE HILLSBOROUGH
5001 3602 sqft

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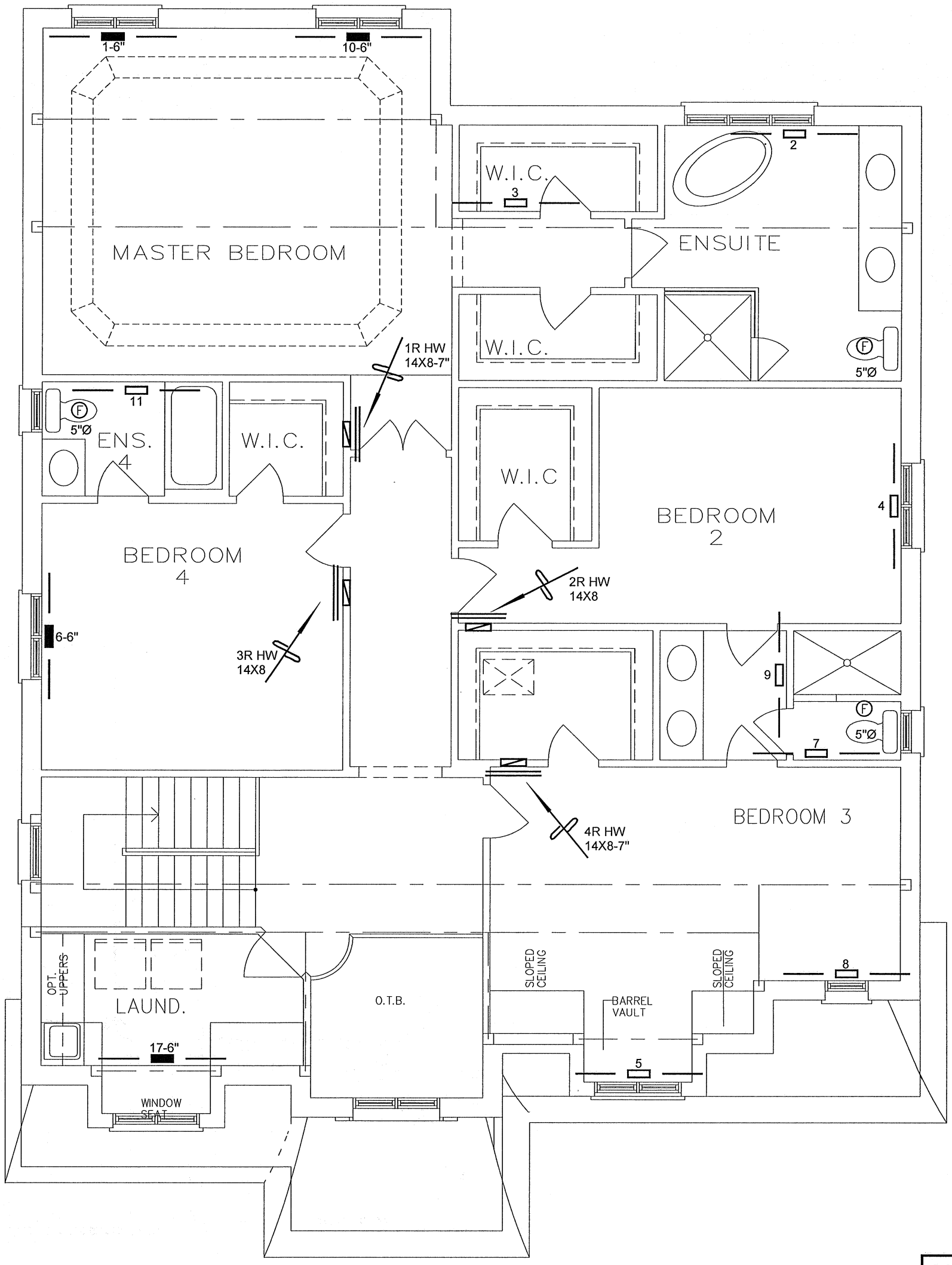
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR
HEATING
LAYOUT

Date JAN/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 77472



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CSA-F280-12

PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
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	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

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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date JAN/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 77472