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**		
BRAMPTON				

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:** 45-05 OPT 2ND - INLAW **Project:** VALES OF HUMBER

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.

March 22, 2022
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.
375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: VALES OF HUMBER | OPT 2ND - INLAW | DATE: Mar-22 | WINTER NATURAL AIR CHANGE RATE 0.227 | HEAT LOSS ΔT °F. 74 | CSA-F280-12
BUILDER: ROYAL PINE HOMES | TYPE: 45-05 | GFA: 3854 | LO# 93106 | SUMMER NATURAL AIR CHANGE RATE 0.074 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			ENS-2			ENS-3			BED-5			S-BATH			PWD		
EXP. WALL			50			28				29			42			13			9			7			15			7			6		
CLG. HT.			9			9				9			9			9			9			9			9			9			10		
	FACTORS																																
GRS.WALL AREA	LOSS	GAIN	450			252				261			378			117			81			63			135			63			60		
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	9	187	139	0	0	0	0	0	0	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	0	0	0		53	1101	2176	79	1641	3243	0	0	0	0	0	0	20	416	821	0	0	0	0	0	0	0	0	0
SOUTH	20.8	24.4	0	0	0	0	0	0		0	0	0	0	0	0	18	374	439	0	0	0	0	0	0	18	374	439	8	166	195	8	166	195
WEST	20.8	41.0	28	582	1149	19	395	780		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.	34.1	100.3	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
DOORS	24.7	3.7	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	3.5	0.5	422	1463	217	233	808	120		208	721	107	299	1037	154	99	343	51	72	250	37	43	149	22	117	406	60	55	191	28	52	180	27
NET EXPOSED BSMT WALL ABOVE GR	3.5	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	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	576	722	321	171	214	95		190	238	106	308	386	172	241	302	134	87	109	48	60	75	33	210	263	117	111	139	62	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0		21	56	25	36	97	43	0	0	0	0	0	0	7	19	8	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0		211	525	78	0	0	0	0	0	0	56	139	21	67	167	25	0	0	0	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				2767			1417				2642			3161			1019			685			825			1043			496			347	
SUB TOTAL HT GAIN					1687			995				2491			3611			624			245			910			616			285			222
LEVEL FACTOR / MULTIPLIER			0.20	0.22		0.20	0.22			0.20	0.22		0.20	0.22		0.20	0.22		0.20	0.22		0.20	0.22		0.20	0.22		0.20	0.22		0.30	0.36	
AIR CHANGE HEAT LOSS				620			318				592			708			228			154			185			234			111			124	
AIR CHANGE HEAT GAIN					85			50				125			181			31			12			46			31			14			11
DUCT LOSS				0			0				323			0			0			84			101			0			0			0	
DUCT GAIN					0			0				374			0			0			26			96			0			0			0
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	0		0	1		240	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					887			0				887			887			887			0			0			887			0			0
TOTAL HT LOSS BTU/H				3387			1734				3558			3869			1248			922			1111			1276			607			471	
TOTAL HT GAIN x 1.3 BTU/H					4081			1358				5353			6395			2318			368			1366			2307			389			303

ROOM USE			GRT			DIN			KT/BF			INLAW			LND			IN-ENS			FOY			MUD						BAS		
EXP. WALL			37			30			41			28			0			7			24			34						198		
CLG. HT.			10			10			10			10			9			10			11			11						10		
	FACTORS																																
GRS.WALL AREA	LOSS	GAIN	370			300			410			280			0			70			264			374						1386		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN					LOSS	GAIN
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	270	201				3	62	46
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	36	748	1478	0	0	0	0	0	0	14	291	575	0	0	0				0	0	0
SOUTH	20.8	24.4	0	0	0	46	956	1122	14	291	342	0	0	0	0	0	0	8	166	195	0	0	0	0	0	0				6	125	146
WEST	20.8	41.0	48	997	1970	0	0	0	96	1994	3941	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				6	125	246
SKYLT.	34.1	100.3	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
DOORS	24.7	3.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	493	73	40	986	146				20	493	73
NET EXPOSED WALL	3.5	0.5	322	1116	166	254	881	131	300	1040	154	244	846	125	0	0	0	62	215	32	230	797	118	321	1113	165				0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.5	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				594	2087	309
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	112	140	62	0	0	0	0	0	0	0	0	0				0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	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	2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	103	256	38	0	0	0	0	0	0	0	0	0				0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0			0						7066		
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			0								
SUBTOTAL HT LOSS				2114			1836			3326			1594			397			381			1581			2369						9957		
SUB TOTAL HT GAIN					2136			1253			4436			1603			100			227			766			512								822
LEVEL FACTOR / MULTIPLIER			0.30	0.36		0.30	0.36		0.30	0.36		0.30	0.36		0.20	0.22		0.30	0.36		0.30	0.36		0.30	0.36					0.50	0.81	
AIR CHANGE HEAT LOSS				758			659			1192			572			89			137			567			850						8097		
AIR CHANGE HEAT GAIN					107			63			222			80			5			11			38			26								41
DUCT LOSS				0			0			0			0			49			0			0			0						0		
DUCT GAIN					0			0			0			0			99			0			0			0								0
HEAT GAIN PEOPLE	240		0		0	0		0	0		0	1		240	0		0	0		0	0		0	0		0				0			0
HEAT GAIN APPLIANCES/LIGHTS					887			887			887			887			887			0			0			0								887
TOTAL HT LOSS BTU/H				2872			2495			4518			2166			534			518			2148			3219						18054		
TOTAL HT GAIN x 1.3 BTU/H					4069			2864			7210			3654			1420			310			1046			699								2275

TOTAL HEAT GAIN BTU/H: 48185 | TONS: 4.02 | LOSS DUE TO VENTILATION LOAD BTU/H: 2694 | STRUCTURAL HEAT LOSS: 54707 | TOTAL COMBINED HEAT LOSS BTU/H: 57401

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: VALES OF HUMBER — OPT 2ND - INLAW
BUILDER: ROYAL PINE HOMES — TYPE: 45-05 — DATE: Mar-22 — GFA: 3854 — LO# 93106

HEATING CFM	1540		COOLING CFM	1540			furnace pressure	0.6																
TOTAL HEAT LOSS	54,707		TOTAL HEAT GAIN	47,786			furnace filter	0.05																
AIR FLOW RATE CFM	28.15		AIR FLOW RATE CFM	32.23			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	14	12	5		plenum pressure s/a	0.18			r/a pressure	0.17												
R/A	0	0	5	3	1		max s/a dif press. loss	0.02			r/a grille press. Loss	0.02												
All S/A diffusers 4"x10" unless noted otherwise on layout.							min adjusted pressure s/a	0.16			adjusted pressure r/a	0.15												
All S/A runs 5"Ø unless noted otherwise on layout.																								

#CARRIER
59SP5A-80-16 **80**

FAN SPEED	
LOW	0
MEDLOW	975
MEDIUM	1200
MEDIUM HIGH	1370
HIGH	1540

AFUE = 97 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = **78,000**
DESIGN CFM = **1540**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 47 °F

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	ENS	MBR	S-BATH	BED-2	BED-3	BED-5	ENS	ENS-3	ENS-2	MBR	BED-4	GRT	DIN	KT/BF	KT/BF	INLAW	LND	IN-ENS	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	0.87	1.69	0.61	1.78	1.93	1.28	0.87	1.11	0.92	1.69	1.25	1.44	2.49	1.51	1.51	1.08	0.53	0.52	2.15	3.22	3.61	3.61	3.61	3.61
CFM PER RUN HEAT	24	48	17	50	54	36	24	31	26	48	35	40	70	42	42	30	15	15	60	91	102	102	102	102
RM GAIN MBH.	0.68	2.04	0.39	2.68	3.20	2.31	0.68	1.37	0.37	2.04	2.32	2.03	2.86	2.40	2.40	1.83	1.42	0.31	1.05	0.70	0.46	0.46	0.46	0.46
CFM PER RUN COOLING	22	66	13	86	103	74	22	44	12	66	75	66	92	77	77	59	46	10	34	23	15	15	15	15
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	47	71	42	57	41	33	42	44	36	62	15	56	10	39	46	27	15	8	30	38	55	37	22	11
EQUIVALENT LENGTH	160	220	220	150	170	190	150	160	180	210	110	130	110	160	120	110	150	110	110	120	120	130	90	130
TOTAL EFFECTIVE LENGTH	207	291	262	207	211	223	192	204	216	272	125	186	120	199	166	137	165	118	140	158	175	167	112	141
ADJUSTED PRESSURE	0.08	0.06	0.07	0.08	0.08	0.08	0.09	0.08	0.08	0.06	0.14	0.09	0.14	0.09	0.1	0.13	0.1	0.15	0.12	0.1	0.09	0.1	0.14	0.11
ROUND DUCT SIZE	4	**6**	4	**6**	**6**	**6**	4	5	4	**6**	**6**	5	**6**	**6**	**6**	5	4	4	5	**6**	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	275	245	195	255	275	184	275	228	298	245	178	294	357	214	214	220	172	172	441	464	520	520	520	520
COOLING VELOCITY (ft/min)	252	337	149	438	525	377	252	323	138	337	382	485	469	393	393	433	528	115	250	117	76	76	76	76
OUTLET GRILL SIZE	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10
TRUNK	B	A	B	C	E	B	B	E	C	A	E	A	C	B	B	D	E	E	D	C	A	B	C	E

RUN #	25	26	27	28	29	30	31
ROOM NAME	BAS	BED-2	BED-3	GRT	KT/BF	INLAW	PWD
RM LOSS MBH.	3.61	1.78	1.93	1.44	1.51	1.08	0.47
CFM PER RUN HEAT	102	50	54	40	42	30	13
RM GAIN MBH.	0.46	2.68	3.20	2.03	2.40	1.83	0.30
CFM PER RUN COOLING	15	86	103	66	77	59	10
ADJUSTED PRESSURE	0.16	0.16	0.16	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	21	49	47	62	50	26	7
EQUIVALENT LENGTH	120	170	160	110	140	110	100
TOTAL EFFECTIVE LENGTH	141	219	207	172	190	136	107
ADJUSTED PRESSURE	0.11	0.07	0.08	0.1	0.09	0.13	0.16
ROUND DUCT SIZE	**6**	**6**	**6**	5	**6**	5	4
HEATING VELOCITY (ft/min)	520	255	275	294	214	220	149
COOLING VELOCITY (ft/min)	76	438	525	485	393	433	115
OUTLET GRILL SIZE	4X10	4X10	4X10	3X10	4X10	3X10	3X10
TRUNK	D	C	E	A	B	D	E

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	278	0.06	9.3	10	x	8	500	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	607	0.06	12.5	20	x	8	546	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	996	0.06	15	26	x	8	690	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	222	0.11	7.4	8	x	8	500	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	541	0.08	11.1	14	x	8	696	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	1215	0.05	17	26	x	10	673
TRUNK Y	580	0.05	12.9	20	x	8	522
TRUNK Z	325	0.05	10.4	12	x	8	488
DROP	1540	0.05	18.5	24	x	14	660

RETURN AIR #	1	2	3	4		6	7	8	9							BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	130	115	230	145	0	130	300	150	95	0	0	0	0	0	0	245
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.	61	62	37	45	1	49	37	38	33	1	1	1	1	1	1	25
EQUIVALENT LENGTH	205	245	175	165	0	205	195	200	180	0	0	0	0	0	0	185
TOTAL EFFECTIVE LH	266	307	212	210	1	254	232	238	213	1	1	1	1	1	1	210
ADJUSTED PRESSURE	0.06	0.05	0.07	0.07	14.80	0.06	0.06	0.06	0.07	14.80	14.80	14.80	14.80	14.80	14.80	0.07
ROUND DUCT SIZE	7	7	8.4	7	0	7	9.6	7.4	6	0	0	0	0	0	0	8.6
INLET GRILL SIZE	8	8	8	8	0	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	X
INLET GRILL SIZE	14	14	24	14	0	14	30	14	14	0	0	0	0	0	0	30

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

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

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

TYPE: 45-05 LO # 93106
SITE NAME: VALES OF HUMBER OPT 2ND - INLAW

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	5	@ 10.6 cfm	53	cfm
Kitchen & Bathrooms	7	@ 10.6 cfm	74.2	cfm
Other Rooms	4	@ 10.6 cfm	42.4	cfm
Table 9.32.3.A.		TOTAL	212.0	cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED 9.32.3.4.(1)

6 Bedrooms

As Per Ashrea 62.2 Dwelling- Unit Ventilation

4.1.1 Total Ventilation Rate

Q_tot=0.03A_floor+7.5(N_br+1)

TOTAL 168.1 cfm

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	212	cfm
Less Principal Ventil. Capacity	168.1	cfm
Required Supplemental Capacity	43.9	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE G2400H ECM Location: BSMT

168.1 cfm [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
168.1 CFM	X	74 F	X	1.08	X	0.20

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
S-BATH	BY INSTALLING CONTRACTOR	50	✓	3.5
IN-ENS	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE G2400H ECM

210 cfm high 50 cfm low

80 % Sensible Efficiency @ 32 deg F (0 deg C) [✓] HVI Approved

LOCATION OF INSTALLATION

Lot: Concession

Township Plan:

Address

Roll # Building Permit #

BUILDER: ROYAL PINE 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: March-22

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

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

HVAC DESIGNS LTD.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 93106 Model: 45-05 Builder: ROYAL PINE HOMES Date: 2022-03-22

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1724	10	17240
First	1724	10	17240
Second	2130	9	19170
Third	0	9	0
Fourth	0	9	0
		Total:	53,650.0 ft³
		Total:	1519.2 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.227
SUMMER NATURAL AIR CHANGE RATE	0.074

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-19	41	74
Summer DTDc	24	30	6	11

5.2.3.1 Heat Loss due to Air Leakage

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

0.227 x 422.00 x 41 °C x 1.2 = 4746 W

= **16194 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.074 x 422.00 x 6 °C x 1.2 = 229 W

= **780 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

168 CFM x 74 °F x 1.08 x 0.20 = **2694 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

168 CFM x 11 °F x 1.08 x 0.20 = **399 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	16,194	9,957	0.813
2	0.3		13,548	0.359
3	0.2		14,451	0.224
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: 45-05 OPT 2ND - INLAW **BUILDER:** ROYAL PINE HOMES
SFQT: 3854 **LO#** 93106 **SITE:** VALES OF HUMBER

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	53650.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
INTERIOR LIGHTING LOAD (Btu/h/ft^2):	1.75	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 61.0 ft	WIDTH: 38.0 ft	EXPOSED PERIMETER:	198.0 ft

2012 OBC - COMPLIANCE PACKAGE **Component**	**Compliance Package SB-12 PERFORMANCE**	
	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+1.5	21.40
Basement Walls Minimum RSI (R)-Value	20	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	1.6	-
Skylights Maximum U-Value	2.6	-
Space Heating Equipment Minimum AFUE	96%	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.9	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

Michael O'Rourke

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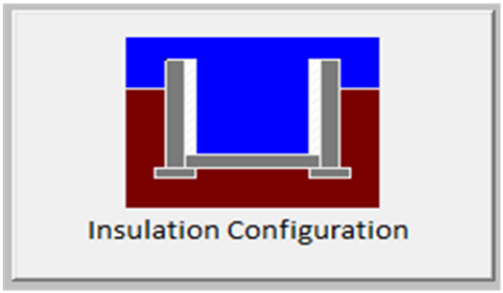
Ajax ON, L1S 2E2
905-619-2300

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

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

Foundation Dimensions		
Floor Length (m):	**18.6**	 Insulation Configuration
Floor Width (m):	**11.6**	
Exposed Perimeter (m):	**0.0**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**2.13**	
Window Area (m^2):	**1.4**	
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):	**2070**	

TYPE: 45-05 OPT 2ND - INLAW
LO# 93106

HVAC Designs Ltd.
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Ajax ON, L1S 2E2
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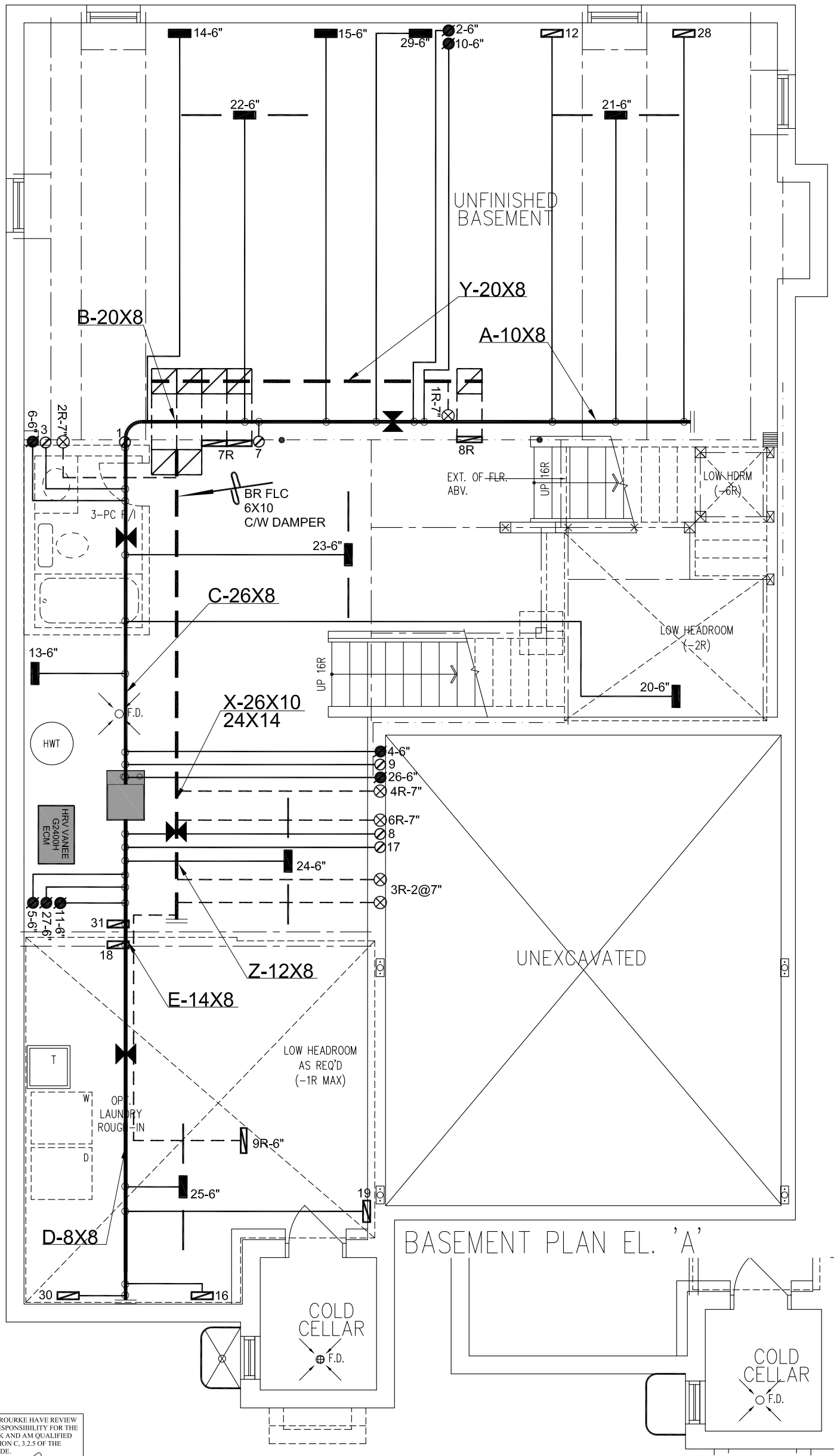
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Brampton
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):	1519.2
Air Leakage/Ventilation	
Air Tightness Type:	Energy Star Detached (2.5 ACH)
Custom BDT Data:	ELA @ 10 Pa. 1418.2 cm^2
	2.50 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 79.3 / Total Exhaust 79.3
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.227**
Cooling Air Leakage Rate (ACH/H):	**0.074**

TYPE: 45-05 OPT 2ND - INLAW

LO# 93106



I MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

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

CSA-F280-12

SB-12 PERFORMANCE

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.	REVISED TO PERFORMANCE PATH	MAR/2022

REVISIONS

Client

ROYAL PINE HOMES

Project Name

VALES OF HUMBER
BRAMPTON, ONTARIO

OPT 2ND - INLAW
45-05 3854 sqft

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Email: info@hvacdesigns.ca
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Specializing in Residential Mechanical Design Services

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

HEAT LOSS 57401 BTU/H	
UNIT DATA	
MAKE	CARRIER
MODEL	59SP5A-80-16
INPUT	80 MBTU/H
OUTPUT	78 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1540 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	14	5	6
1ST FLOOR	12	3	3
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

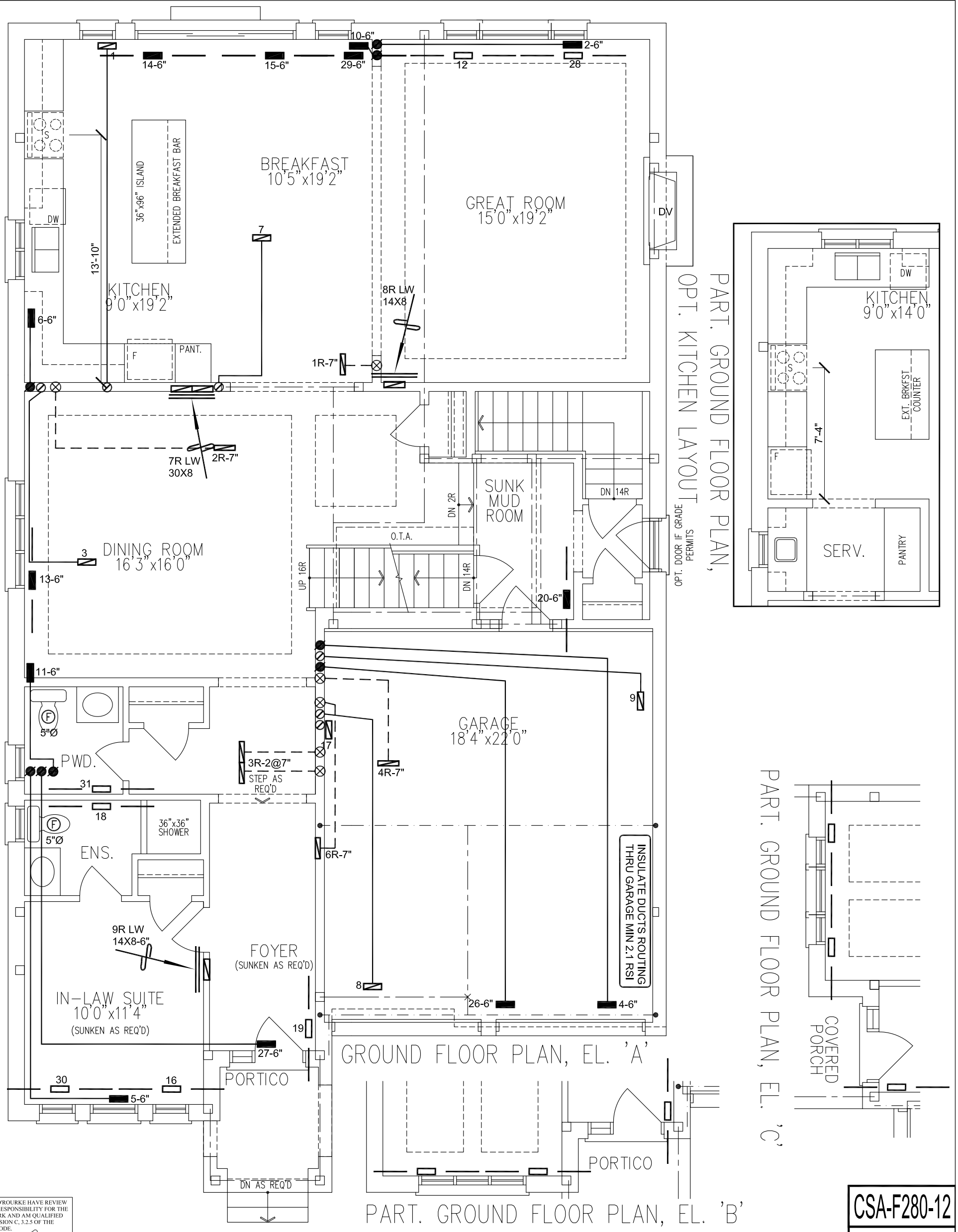
BASEMENT HEATING LAYOUT

Date OCT/2021

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 93106



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SB-12 PERFORMANCE

HVAC LEGEND

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— ▭ —	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.	REVISED TO PERFORMANCE PATH	MAR/2022

REVISIONS

Client
ROYAL PINE HOMES

Project Name
VALES OF HUMBER
BRAMPTON, ONTARIO

OPT 2ND - INLAW
45-05 3854 sqft

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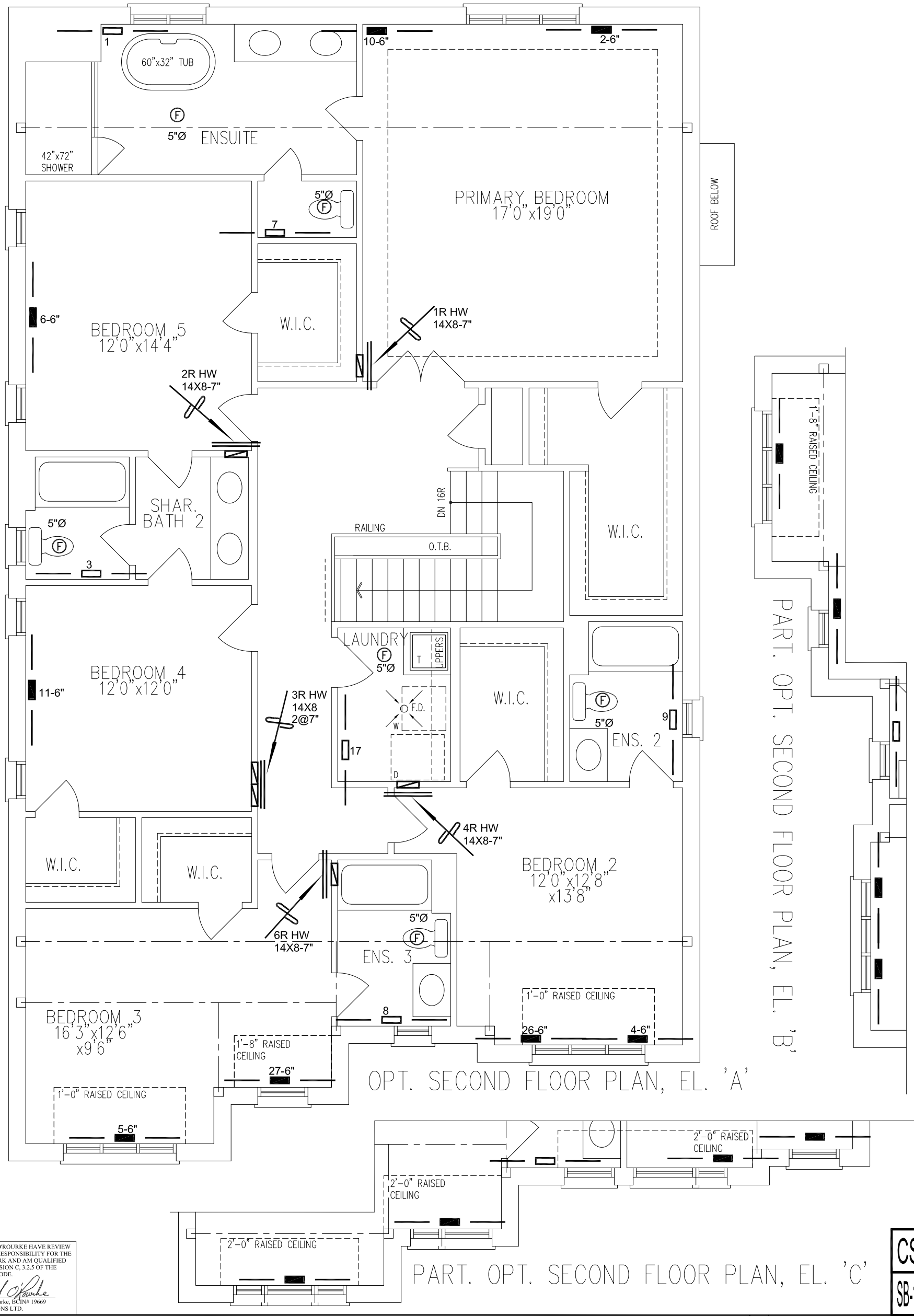
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date OCT/2021
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 93106



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CSA-F280-12

SB-12 PERFORMANCE

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

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ROYAL PINE HOMES

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BRAMPTON, ONTARIO

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45-05 3854 sqft

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Sheet Title

SECOND FLOOR HEATING LAYOUT

Date OCT/2021

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 93106