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:** 40-6 OPT GROUND **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 21, 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 GROUND | DATE: Mar-22 | WINTER NATURAL AIR CHANGE RATE 0.248 | HEAT LOSS ΔT °F. 74 | CSA-F280-12
BUILDER: ROYAL PINE HOMES | TYPE: 40-6 | GFA: 3491 | LO# 92085 | SUMMER NATURAL AIR CHANGE RATE 0.081 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			BTH-2/3				UP-DEN			S-BATH			GM-ENS		
EXP. WALL			34			26			11			15			25			13			13				40			6			0		
CLG. HT.			9			9			9			9			9			9			9				9			9			10		
	FACTORS																																
GRS.WALL AREA	LOSS	GAIN	306			234			99			135			225			117			117				360			54			0		
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	19	395	294	0	0	0	0	0	0	7	145	108		13	270	201	0	0	0	7	145	108
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	37	769	1519	0	0	0	0	0	0		45	935	1847	0	0	0	0	0	0
SOUTH	20.8	24.4	0	0	0	6	125	146	6	125	146	0	0	0	0	0	0	17	353	415	0	0	0		17	353	415	6	125	146	0	0	0
WEST	20.8	41.0	38	789	1560	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	268	929	138	209	725	107	93	322	48	116	402	60	188	652	97	100	347	51	110	381	57		285	988	146	48	166	25	-7	-24	-4
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	288	361	160	168	210	94	143	179	80	257	322	143	212	266	118	244	306	136	160	200	89		272	341	152	84	105	47	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	9	24	11	0	0	0	0	0	0		14	38	17	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	221	550	82	0	0	0	63	157	23		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				2080			1455			626			1119			2261			1006			884				2925			396			121	
SUB TOTAL HT GAIN					1858			1127			274			497			1826			602			277			2778			218			105	
LEVEL FACTOR / MULTIPLIER			0.20	0.24		0.20	0.24		0.20	0.24		0.20	0.24		0.20	0.24		0.20	0.24		0.20	0.24			0.20	0.24		0.20	0.24		0.30	0.41	
AIR CHANGE HEAT LOSS				489			342			147			263			532			237			208				688			93			49	
AIR CHANGE HEAT GAIN					110			67			16			30			109			36			16			165			13			6	
DUCT LOSS				0			0			0			0			279			0			109			0			0			0	
DUCT GAIN					0			0			0			0			276			0			29			0			0			0	
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0		0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					583			0			0			583			583			583			0			583			0			0	
TOTAL HT LOSS BTU/H				2569			1797			774			1382			3072			1242			1201			3613			490			170	
TOTAL HT GAIN x 1.3 BTU/H					3941			1553			377			1754			3943			1899			420			4584			300			144	

ROOM USE			LAND			DN/LV			K/B/F			GM			LND			PWD			FOY			MUD						WOD			BAS		
EXP. WALL			15			20			68			10			9			13			45			28						42			190		
CLG. HT.			10			10			10			10			9			11			11			11						10			10		
	FACTORS																																		
GRS.WALL AREA	LOSS	GAIN	150			200			680			100			81			143			495			308						420			1456		
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	10	208	155	19	395	294	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	6	125	93
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	15	312	616	0	0	0	8	166	328	0	0	0				0	0	0	0	0	0
SOUTH	20.8	24.4	0	0	0	38	789	927	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	6	125	146
WEST	20.8	41.0	0	0	0	0	0	0	85	1766	3489	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				10	208	410	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	20	493	73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	986	146	20	493	73				0	0	0	0	0	0
NET EXPOSED WALL	3.5	0.5	130	451	67	162	562	83	585	2028	301	81	281	42	66	229	34	143	496	74	447	1550	230	288	999	148				0	0	0	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				242	850	126	444	1560	231
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	8	10	4	0	0	0	70	88	39	0	0	0	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	10	27	12	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	80	199	30	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			0								6760		
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			0						0				
SUBTOTAL HT LOSS				944			1351			4012			676			854			496			2702			1492						1058			8570		
SUB TOTAL HT GAIN					140			1010			3949			336			730			74			704			221						537			470
LEVEL FACTOR / MULTIPLIER			0.30	0.41		0.30	0.41		0.30	0.41		0.30	0.41		0.20	0.24		0.30	0.41		0.30	0.41		0.30	0.41								0.50	0.83	
AIR CHANGE HEAT LOSS				384			550			1633			275			201			202			1100			607									8000		
AIR CHANGE HEAT GAIN					8			60			235			20			43			4			42			13									60
DUCT LOSS				0			0			0			0			106			0			0			0									0		
DUCT GAIN					0			0			0			0			136			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	0		0
HEAT GAIN APPLIANCES/LIGHTS					0			583			583			583			583			0			0			583						0			583
TOTAL HT LOSS BTU/H				1328			1901			5645			951			1161			698			3802			2099						1058			16569	
TOTAL HT GAIN x 1.3 BTU/H					193			2150			6197			1532			1940			101			970			1063						697			1448

TOTAL HEAT GAIN BTU/H: 35490 | TONS: 2.96 | LOSS DUE TO VENTILATION LOAD BTU/H: 1911 | STRUCTURAL HEAT LOSS: 51519 | TOTAL COMBINED HEAT LOSS BTU/H: 53430

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 GROUND
BUILDER: ROYAL PINE HOMES — TYPE: 40-6 — DATE: Mar-22 — GFA: 3491 — LO# 92085

HEATING CFM	1145		COOLING CFM	1145			furnace pressure	0.6										#*CARRIER		AFUE =	97 %		
TOTAL HEAT LOSS	51,519		TOTAL HEAT GAIN	35,207			furnace filter	0.05										59SP5A-60-14	60	INPUT (BTU/H) =	60,000		
AIR FLOW RATE CFM	22.22		AIR FLOW RATE CFM	32.52			a/c coil pressure	0.2										FAN SPEED		OUTPUT (BTU/H) =	**58,000**		
							available pressure for s/a & r/a	0.35										LOW	0				
																		MEDLOW	785	DESIGN CFM =	**1145**		
							plenum pressure s/a	0.18			r/a pressure	0.17						MEDIUM	960	CFM @ .6 " E.S.P.			
							max s/a dif press. loss	0.02			r/a grille press. Loss	0.02						MEDIUM HIGH	1145				
							min adjusted pressure s/a	0.16			adjusted pressure r/a	0.15						HIGH	1440	TEMPERATURE RISE	47	°F	

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	15	10	4
R/A	0	0	6	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	BTH-2/3	BTH-2/3	UP-DEN	MBR	S-BATH	LAND	DN/LV	K/B/F	K/B/F	GM	LND	PWD	FOY	GM-ENS	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.28	0.90	0.77	1.38	1.54	1.24	0.60	0.60	1.81	1.28	0.49	1.33	1.90	1.88	1.88	0.95	1.16	0.70	3.80	0.17	4.41	4.41	4.41	4.41
CFM PER RUN HEAT	29	20	17	31	34	28	13	13	40	29	11	30	42	42	42	21	26	16	84	4	98	98	98	98
RM GAIN MBH.	1.97	0.78	0.38	1.75	1.97	1.90	0.21	0.21	2.29	1.97	0.30	0.19	2.15	2.07	2.07	1.53	1.94	0.10	0.97	0.14	0.54	0.54	0.54	0.54
CFM PER RUN COOLING	64	25	12	57	64	62	7	7	75	64	10	6	70	67	67	50	63	3	32	5	17	17	17	17
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	45	46	38	32	62	19	29	44	63	36	41	34	20	45	27	14	53	28	45	21	26	30	20	45
EQUIVALENT LENGTH	170	130	120	110	130	110	140	120	130	130	150	160	110	140	120	90	170	130	100	170	110	110	130	120
TOTAL EFFECTIVE LENGTH	215	176	158	142	192	129	169	164	193	166	191	194	130	185	147	104	223	158	145	191	136	140	150	165
ADJUSTED PRESSURE	0.08	0.1	0.11	0.12	0.09	0.13	0.1	0.1	0.09	0.1	0.09	0.09	0.13	0.09	0.12	0.17	0.08	0.11	0.11	0.09	0.12	0.12	0.11	0.1
ROUND DUCT SIZE	5	4	4	**6**	**6**	**6**	4	4	**6**	5	4	4	5	5	5	**6**	5	4	**6**	4	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	213	229	195	158	173	143	149	149	204	213	126	344	308	308	308	107	191	184	428	46	500	500	500	500
COOLING VELOCITY (ft/min)	470	287	138	291	326	316	80	80	382	470	115	69	514	492	492	255	463	34	163	57	87	87	87	87
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	B	B	C	E	C	C	E	D	A	E	D	C	A	A	C	D	E	D	C	A	B	C	D

RUN #	25	26	27	28	29
ROOM NAME	BED-3	UP-DEN	K/B/F	ENS	MUD
RM LOSS MBH.	1.54	1.81	1.88	0.90	2.10
CFM PER RUN HEAT	34	40	42	20	47
RM GAIN MBH.	1.97	2.29	2.07	0.78	1.06
CFM PER RUN COOLING	64	75	67	25	35
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	58	70	47	50	26
EQUIVALENT LENGTH	120	150	160	140	150
TOTAL EFFECTIVE LENGTH	178	220	207	190	176
ADJUSTED PRESSURE	0.1	0.08	0.08	0.09	0.1
ROUND DUCT SIZE	**6**	**6**	5	4	4
HEATING VELOCITY (ft/min)	173	204	308	229	539
COOLING VELOCITY (ft/min)	326	382	492	287	402
OUTLET GRILL SIZE	4X10	4X10	3X10	3X10	3X10
TRUNK	E	D	B	B	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	240	0.08	8.2	8	x	8	540	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	197	0.08	7.6	8	x	8	443	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	674	0.08	12.1	18	x	8	674	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	318	0.08	9.1	10	x	8	572	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	473	0.08	10.6	14	x	8	608	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	1025	0.05	15.9	30	x	8	615
TRUNK Y	615	0.05	13.1	20	x	8	554
TRUNK Z	0	0.05	0	0	x	8	0
DROP	1145	0.05	16.6	24	x	10	687

RETURN AIR #	1	2	3	4	5	6	7	8								BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	85	85	95	120	95	75	300	135	0	0	0	0	0	0	0	155
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.	40	33	39	34	35	66	26	32	1	1	1	1	1	1	1	18
EQUIVALENT LENGTH	205	205	165	120	185	260	235	240	0	0	0	0	0	0	0	265
TOTAL EFFECTIVE LH	245	238	204	154	220	326	261	272	1	1	1	1	1	1	1	283
ADJUSTED PRESSURE	0.06	0.06	0.07	0.10	0.07	0.05	0.06	0.05	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.05
ROUND DUCT SIZE	6	6	6	6	6	6	9.6	7.5	0	0	0	0	0	0	0	7.8
INLET GRILL SIZE	8	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	X
INLET GRILL SIZE	14	14	14	14	14	14	30	14	0	0	0	0	0	0	0	24

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

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

HVAC DESIGNS LTD.
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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

TYPE: 40-6 LO # 92085
SITE NAME: VALES OF HUMBER OPT GROUND

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	4	@ 10.6 cfm	42.4	cfm
Kitchen & Bathrooms	6	@ 10.6 cfm	63.6	cfm
Other Rooms	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.		TOTAL	212.0	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	**95.4**	**cfm**

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	212	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	116.6	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE V150H Location: BSMT

95.4 cfm [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
95.4 CFM	X	74 F	X	1.08	X	0.25

SUPPLEMENTAL FANS BY INSTALLING CONTRACTOR

Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	✓	3.5
BTH-2/3	BY INSTALLING CONTRACTOR	50	✓	3.5
S-BATH	BY INSTALLING CONTRACTOR	50	✓	3.5
PWD	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE V150H

150 cfm high 35 cfm low

75 % Sensible Efficiency @ 32 deg F (0 deg C) [✓] HVI Approved

LOCATION OF INSTALLATION

Lot: Concession

Township Plan:

Address

Roll # Building Permit #

BUILDER: 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.

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

CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 92085 Model: 40-6 Builder: ROYAL PINE HOMES Date: 2022-03-21

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1560	10	15600
First	1560	10	15600
Second	1931	9	17379
Third	0	9	0
Fourth	0	9	0
		Total:	48,579.0 ft³
		Total:	1375.6 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.248
SUMMER NATURAL AIR CHANGE RATE	0.081

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

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

0.248 x 382.11 x 41 °C x 1.2 = 4689 W

= **15999 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.081 x 382.11 x 6 °C x 1.2 = 226 W

= **771 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

95 CFM x 74 °F x 1.08 x 0.25 = **1911 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

95 CFM x 11 °F x 1.08 x 0.25 = **283 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	15,999	9,628	0.831
2	0.3		11,793	0.407
3	0.2		13,605	0.235
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: 40-6 OPT GROUND **BUILDER:** ROYAL PINE HOMES
SFQT: 3491 **LO#** 92085 **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):	48579.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
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: 63.0 ft	WIDTH: 32.0 ft	EXPOSED PERIMETER:	190.0 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

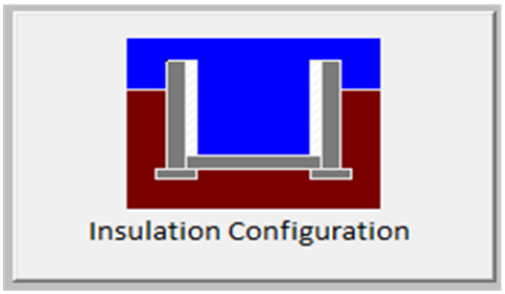
Michael O'Rourke

HVAC Designs Ltd.
375 Finley Ave, Suite 202
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):	**19.2**	 Insulation Configuration
Floor Width (m):	**9.8**	
Exposed Perimeter (m):	**0.0**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**2.13**	
Window Area (m^2):	**2.0**	
Door Area (m^2):	**0.0**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):	**1981**	

TYPE: 40-6 OPT GROUND
LO# 92085

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

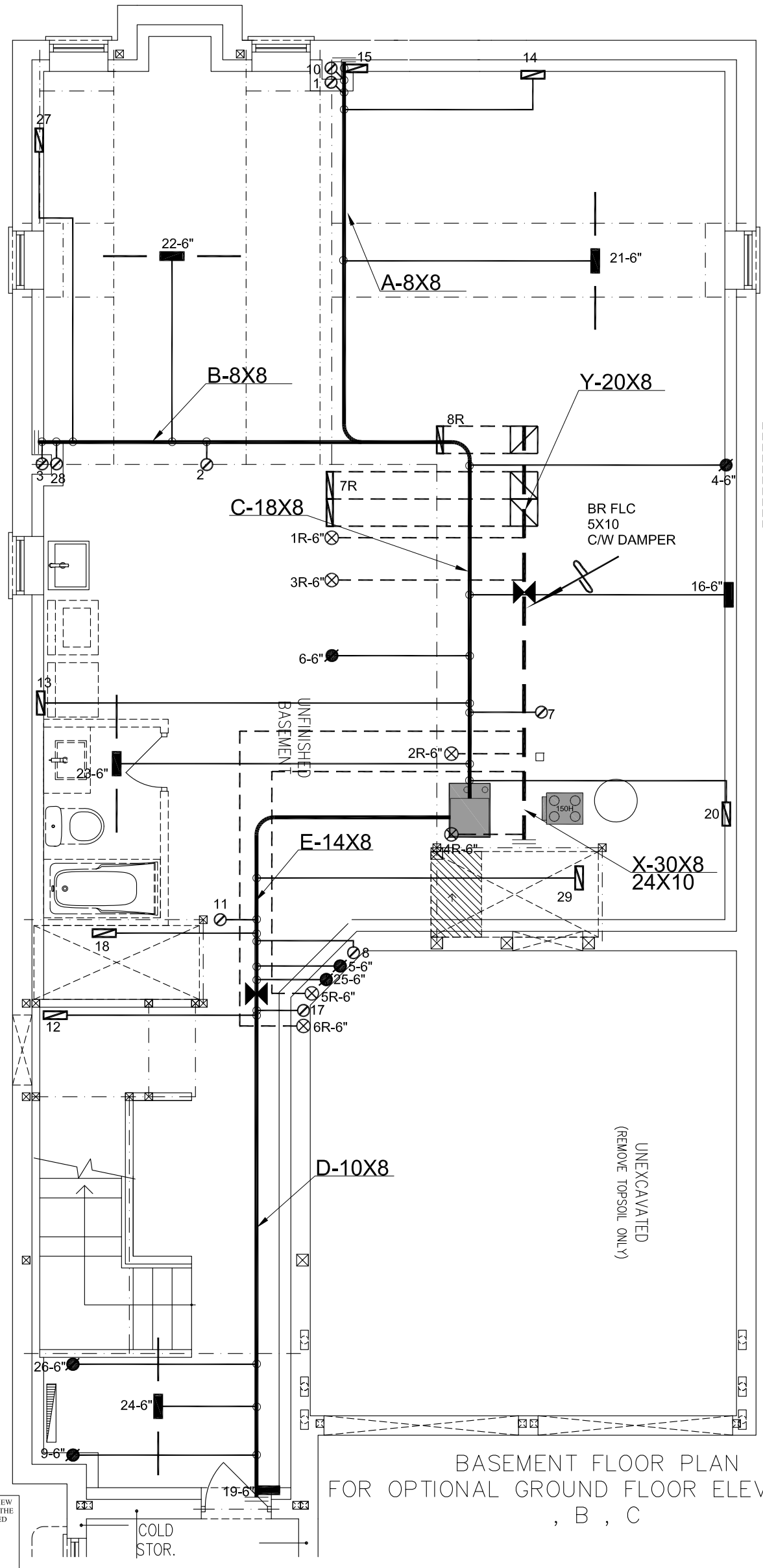
Air Infiltration Residential Load Calculator

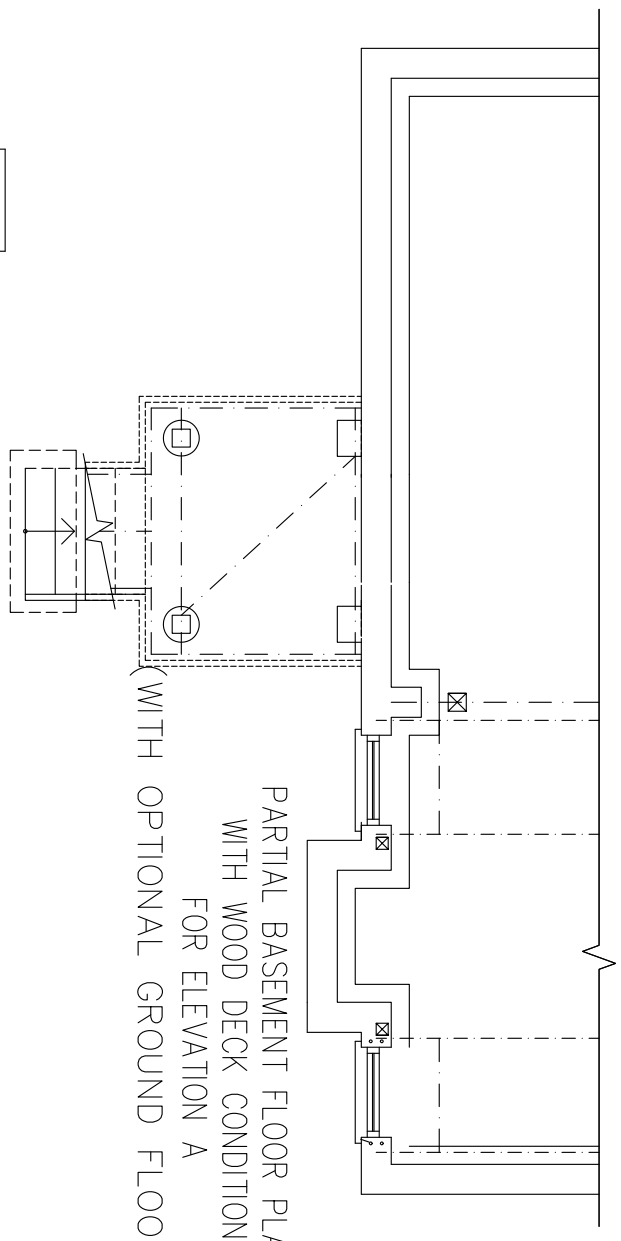
Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	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):	7.62
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	1375.6
Air Leakage/Ventilation	
Air Tightness Type:	Energy Star Detached (2.5 ACH)
Custom BDT Data:	ELA @ 10 Pa. 1284.1 cm^2
	2.50 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 45.0 / Total Exhaust 45.0
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.248**
Cooling Air Leakage Rate (ACH/H):	**0.081**

TYPE: 40-6 OPT GROUND

LO# 92085





PARTIAL BASEMENT FLOOR PLAN
WITH WOOD DECK CONDITION
FOR ELEVATION A
(WITH OPTIONAL GROUND FLOOR PLAN)

BASEMENT FLOOR PLAN
FOR OPTIONAL GROUND FLOOR ELEVATION A
, B , C

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 GROUND
40-6 3491 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
Web: www.hvacdesigns.ca
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.

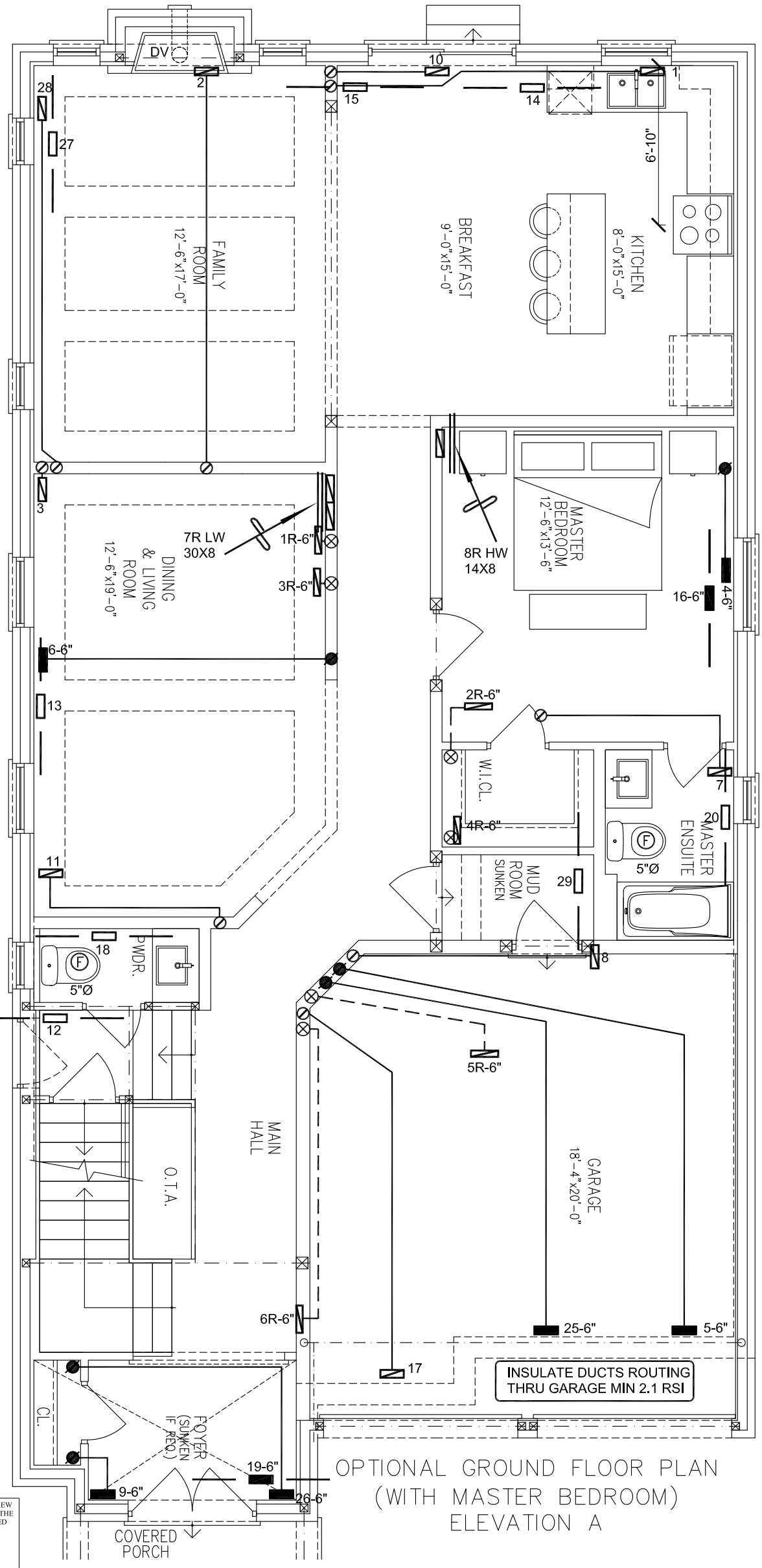
HEAT LOSS 53430 BTU/H		
UNIT DATA		
MAKE	CARRIER	
MODEL	59SP5A-60-14	
INPUT	60	MBTU/H
OUTPUT	58	MBTU/H
COOLING	3.0	TONS
FAN SPEED	1145	cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	15	6	4
1ST FLOOR	10	2	2
BASEMENT	4	1	0

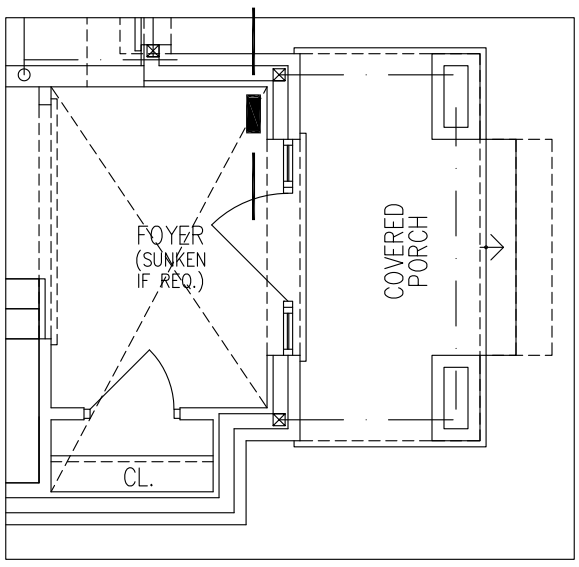
ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

Sheet Title
BASEMENT HEATING LAYOUT

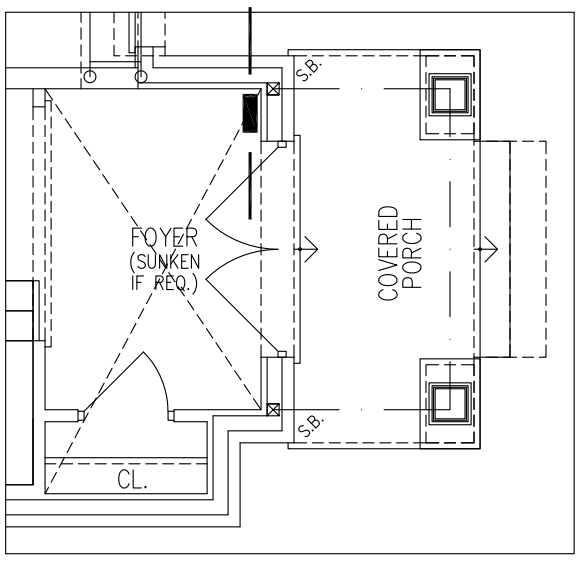
Date AUG/2021
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 92085



OPTIONAL GROUND FLOOR PLAN
(WITH MASTER BEDROOM)
ELEVATION A



STANDARD
GROUND FLOOR PLAN
ELEVATION B



STANDARD
GROUND FLOOR PLAN
ELEVATION C

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
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	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 GROUND
40-6 3491 sqft

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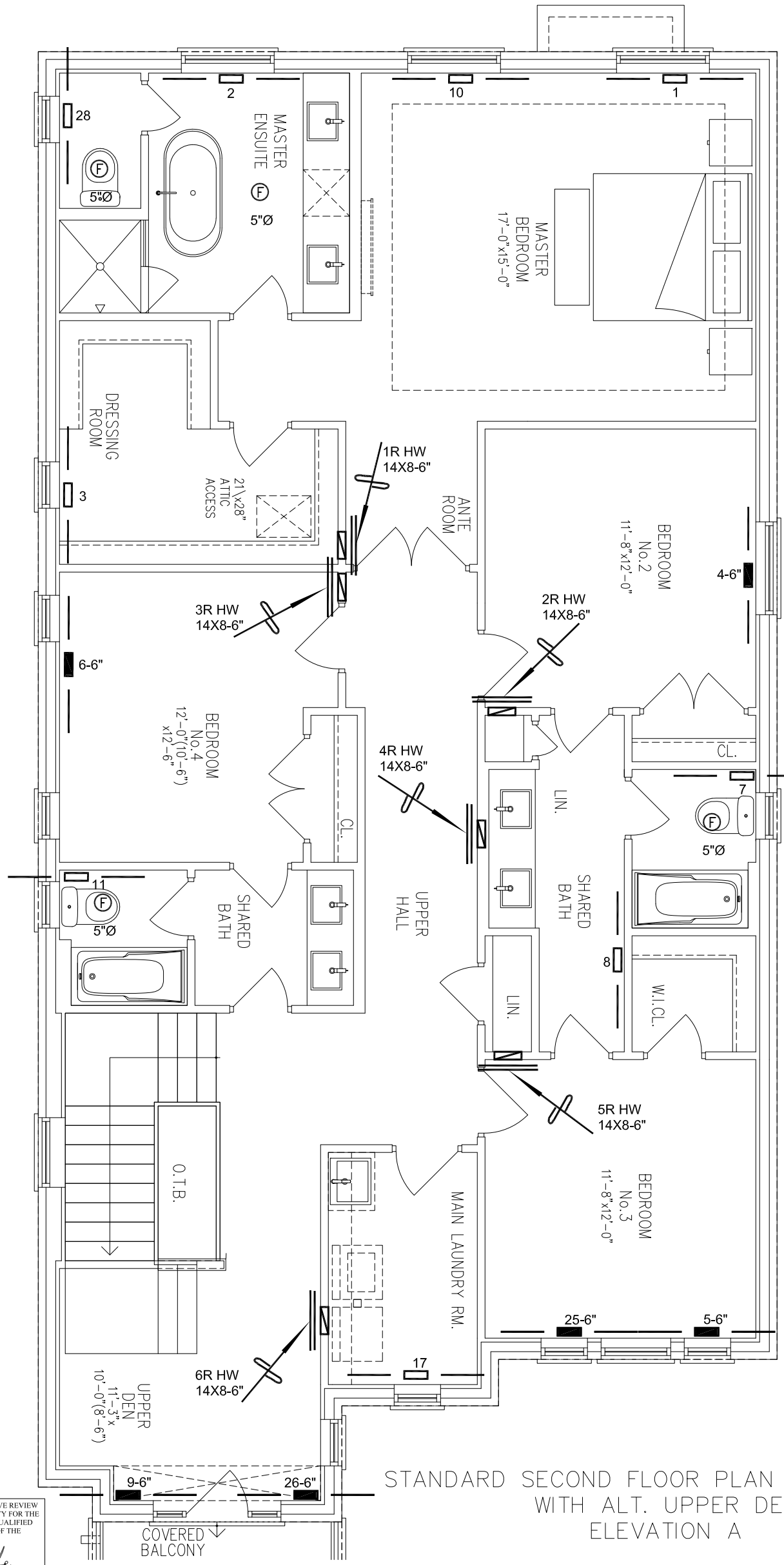
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR
HEATING
LAYOUT

Date AUG/2021
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 92085



STANDARD SECOND FLOOR PLAN (4 BEDROOM)
WITH ALT. UPPER DEN
ELEVATION B

STANDARD SECOND FLOOR PLAN (4 BEDROOM)
WITH ALT. UPPER DEN
ELEVATION C

STANDARD SECOND FLOOR PLAN (4 BEDROOM)
WITH ALT. UPPER DEN
ELEVATION A

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.		
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1.	REVISED TO PERFORMANCE PATH	MAR/2022

REVISIONS

Client
ROYAL PINE HOMES

Project Name
VALES OF HUMBER
BRAMPTON, ONTARIO

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40-6 3491 sqft

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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date AUG/2021
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 92085