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**		
RICHMOND HILL				

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:** 4506 **Project:** CENTREFIELD (WEST GORMLEY)

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.

June 4, 2021
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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Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: CENTREFIELD (WEST GORMLEY) | DATE: Jun-21 | WINTER NATURAL AIR CHANGE RATE 0.233 | HEAT LOSS ΔT °F. 78 | CSA-F280-12
BUILDER: ROYAL PINE HOMES | TYPE: 4506 | GFA: 3348 | LO# 87522 | SUMMER NATURAL AIR CHANGE RATE 0.073 | HEAT GAIN ΔT °F. 13 | SB-12 PERFORMANCE

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			BATH			COMP			LAUN			ENS-2		
EXP. WALL			18			29			23			29			47			19			9			8			0			6		
CLG. HT.			9			9			9			9			9			9			9			12			9			9		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	162			261			207			261			423			171			81			96			0			54		
GLAZING			LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN
NORTH	21.8	14.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	261	179	0	0	0	7	152	105
EAST	21.8	38.4	0	0	0	0	0	0	0	0	0	45	980	1727	45	980	1727	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	21.8	23.1	0	0	0	37	806	856	0	0	0	0	0	0	36	784	832	45	980	1041	13	283	301	0	0	0	0	0	0	0	0	0
WEST	21.8	38.4	28	610	1075	27	588	1036	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.	35.8	101.2	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	0	0	0
DOORS	25.8	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.2	0.7	134	564	93	197	828	136	207	871	143	216	908	149	342	1438	237	126	530	87	68	286	47	84	353	58	0	0	0	47	198	33
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	306	402	180	66	87	39	102	134	60	172	226	101	238	313	140	302	397	178	153	201	90	80	105	47	42	55	25	66	87	39
NO ATTIC EXPOSED CLG	2.8	1.3	0	0	0	130	365	163	0	0	0	24	67	30	28	79	35	21	59	26	0	0	0	80	225	101	0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	196	512	84	0	0	0	0	0	0	0	0	0	0	0	0	42	110	18	66	172	28
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				1576			2675			1005			2694			3594			1966			770			944			165			609	
SUB TOTAL HT GAIN					1347			2230			203			2092			2972			1332			438			385			43			204
LEVEL FACTOR / MULTIPLIER			0.20	0.18		0.20	0.18		0.20	0.18		0.20	0.18		0.20	0.18		0.20	0.18		0.20	0.18		0.20	0.18		0.20	0.18		0.20	0.18	
AIR CHANGE HEAT LOSS				285			484			182			488			650			356			139			171			30			110	
AIR CHANGE HEAT GAIN					60			99			9			93			132			59			19			17			2			9
DUCT LOSS				0			0			0			318			0			0			0			0			19			72	
DUCT GAIN					0			0			0			294			0			0			0			0			56			21
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					513			0			0			513			513			513			0			513			513			0
TOTAL HT LOSS BTU/H				1861			3159			1186			3499			4245			2322			910			1115			214			791	
TOTAL HT GAIN x 1.3 BTU/H					3120			3028			276			4201			5013			2786			594			1189			797			305

ROOM USE			DIN			FAM			KIT			LIV			WIC-3			W/R			FOY			MUD						BAS		
EXP. WALL			28			33			61			31			6			18			15			28						188		
CLG. HT.			11			11			11			11			9			11			11			11						9		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	308			363			671			341			54			198			165			308						1128		
GLAZING			LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN				LOSS		GAIN
NORTH	21.8	14.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0
EAST	21.8	38.4	0	0	0	0	0	0	0	0	0	43	937	1651	9	196	345	10	218	384	0	0	0	0	0	0				0	0	0
SOUTH	21.8	23.1	49	1067	1133	0	0	0	38	828	879	43	937	994	0	0	0	0	0	0	8	174	185	0	0	0				12	261	277
WEST	21.8	38.4	0	0	0	37	806	1420	71	1547	2726	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				8	174	307
SKYLT.	35.8	101.2	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
DOORS	25.8	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	1008	166	20	517	85				20	517	85
NET EXPOSED WALL	4.2	0.7	259	1089	179	326	1371	226	562	2363	389	255	1072	176	45	189	31	188	791	130	118	496	82	288	1211	199				0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.7	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				564	2078	342
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	78	103	46	0	0	0	0	0	0	0	0	0				0	0	0
NO ATTIC EXPOSED CLG	2.8	1.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	78	204	34	0	0	0	0	0	0	0	0	0				0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0			0						6479		
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			0								
SUBTOTAL HT LOSS				2157			2177			4738			2946			691			1008			1679			1728						9509		
SUB TOTAL HT GAIN					1312			1646			3993			2821			456			514			432			284								1011
LEVEL FACTOR / MULTIPLIER			0.30	0.28		0.30	0.28		0.30	0.28		0.30	0.28		0.20	0.18		0.30	0.28		0.30	0.28		0.30	0.28					0.50	0.79	
AIR CHANGE HEAT LOSS				595			600			1306			812			125			278			463			476						7551		
AIR CHANGE HEAT GAIN					58			73			177			125			20			23			19			13								45
DUCT LOSS				0			0			0			0			82			0			0			0						0		
DUCT GAIN					0			0			0			0			48			0			0			0								0
HEAT GAIN PEOPLE	240		0		0	0		0	0		0	0		0	0		0	0		0	0		0	0		0				0		0
HEAT GAIN APPLIANCES/LIGHTS					513			513			513			513			0			0			0			513								513
TOTAL HT LOSS BTU/H				2751			2777			6044			3758			898			1286			2141			2205						17060		
TOTAL HT GAIN x 1.3 BTU/H					2448			2901			6087			4497			681			698			587			1053								2040

TOTAL HEAT GAIN BTU/H: 42575 TONS: 3.55 LOSS DUE TO VENTILATION LOAD BTU/H: 1670 STRUCTURAL HEAT LOSS: 58223 TOTAL COMBINED HEAT LOSS BTU/H: 59893

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: CENTREFIELD (WEST GORMLEY)
BUILDER: ROYAL PINE HOMES — TYPE: 4506 — DATE: Jun-21 — GFA: 3348 — LO# 87522

HEATING CFM	1370		COOLING CFM	1370			furnace pressure	0.6										**CARRIER		AFUE =	97 %			
TOTAL HEAT LOSS	58,223		TOTAL HEAT GAIN	42,300			furnace filter	0.05									**59TN6A-080-14V**	**80**		INPUT (BTU/H) =	80,000			
AIR FLOW RATE CFM	23.53		AIR FLOW RATE CFM	32.39			a/c coil pressure	0.2									FAN SPEED			OUTPUT (BTU/H) =	**78,000**			
							available pressure										LOW	1030						
							for s/a & r/a	0.35									MEDLOW	0		DESIGN CFM =	**1370**			
RUN COUNT	4th	3rd	2nd	1st	Bas												MEDIUM	1370		CFM @ .6 " E.S.P.				
S/A	0	0	16	10	5		plenum pressure s/a	0.18			r/a pressure	0.17					MEDIUM HIGH	0						
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					HIGH	1800		TEMPERATURE RISE	53	°F		
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	COMP	LAUN	MBR	ENS-2	DIN	FAM	KIT	KIT	LIV	WIC-3	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	0.93	1.58	1.19	1.75	2.12	1.16	0.91	1.12	0.21	0.93	0.79	2.75	2.78	2.01	2.01	1.88	0.90	1.29	2.14	2.20	3.41	3.41	3.41	3.41
CFM PER RUN HEAT	22	37	28	41	50	27	21	26	5	22	19	65	65	47	47	44	21	30	50	52	80	80	80	80
RM GAIN MBH.	1.56	1.51	0.28	2.10	2.51	1.39	0.59	1.19	0.80	1.56	0.31	2.45	2.90	2.03	2.03	2.25	0.68	0.70	0.59	1.05	0.41	0.41	0.41	0.41
CFM PER RUN COOLING	51	49	9	68	81	45	19	39	26	51	10	79	94	66	66	73	22	23	19	34	13	13	13	13
ADJUSTED PRESSURE	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	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	42	60	54	48	82	52	25	26	38	49	76	49	14	37	32	66	55	58	65	16	43	20	21	39
EQUIVALENT LENGTH	220	160	195	150	150	210	200	150	140	150	170	130	140	150	130	140	150	180	160	110	130	150	130	140
TOTAL EFFECTIVE LENGTH	262	220	249	198	232	262	225	176	178	199	246	179	154	187	162	206	205	238	225	126	173	170	151	179
ADJUSTED PRESSURE	0.07	0.08	0.07	0.09	0.07	0.07	0.08	0.1	0.1	0.09	0.07	0.1	0.11	0.09	0.11	0.08	0.08	0.07	0.08	0.14	0.1	0.1	0.11	0.1
ROUND DUCT SIZE	5	5	4	5	**6**	5	4	4	4	5	4	5	**6**	5	5	**6**	4	4	5	4	5	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	162	272	321	301	255	198	241	298	57	162	218	477	331	345	345	224	241	344	367	597	587	408	408	408
COOLING VELOCITY (ft/min)	374	360	103	499	413	330	218	447	298	374	115	580	479	485	485	372	252	264	140	390	95	66	66	66
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10
TRUNK	C	B	C	D	A	B	D	D	D	C	A	B	D	B	C	A	D	A	A	D	B	C	C	B

RUN #	25	26	27	28	29	30	31
ROOM NAME	BAS	ENS	BED-2	BED-3	BED-4	KIT	LIV
RM LOSS MBH.	3.41	1.58	1.75	2.12	1.16	2.01	1.88
CFM PER RUN HEAT	80	37	41	50	27	47	44
RM GAIN MBH.	0.41	1.51	2.10	2.51	1.39	2.03	2.25
CFM PER RUN COOLING	13	49	68	81	45	66	73
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.17	0.17	0.17
ACTUAL DUCT LGH.	68	43	39	79	66	34	67
EQUIVALENT LENGTH	150	200	180	210	240	130	160
TOTAL EFFECTIVE LENGTH	218	243	219	289	306	164	227
ADJUSTED PRESSURE	0.08	0.07	0.08	0.06	0.06	0.1	0.08
ROUND DUCT SIZE	**6**	5	5	**6**	5	5	**6**
HEATING VELOCITY (ft/min)	408	272	301	255	198	345	224
COOLING VELOCITY (ft/min)	66	360	499	413	330	485	372
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	3X10	3X10	4X10
TRUNK	A	B	D	A	A	B	A

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	394	0.06	10.6	14	x	8	507	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	420	0.07	10.5	14	x	8	540	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	1093	0.06	15.6	28	x	8	703	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	1365	0.06	16.9	26	x	10	756	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	0.05	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	155	0.05	7.8	8	x	8	349
TRUNK X	1370	0.05	17.7	30	x	10	658
TRUNK Y	915	0.05	15.3	28	x	8	588
TRUNK Z	560	0.05	12.7	18	x	8	560
DROP	1370	0.05	17.7	24	x	12	685

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	175	75	85	85	95	180	330	155	0	0	0	0	0	0	0	190
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.	42	52	67	60	66	27	40	62	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	185	235	165	195	155	145	240	170	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	227	287	232	255	221	172	280	232	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.07	0.05	0.06	0.06	0.07	0.09	0.05	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	7.5	6	6	6	6	7.2	10.4	7.5	0	0	0	0	0	0	0	7.1
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	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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Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

TYPE: 4506 LO # 87522
SITE NAME: CENTREFIELD (WEST GORMLEY)

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	7	@ 10.6 cfm	74.2	cfm
Table 9.32.3.A.		TOTAL	201.4	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	201.4	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	121.9	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 65H Location: BSMT

79.5 cfm [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
79.5 CFM	X	78 F	X	1.08	X	0.25

SUPPLEMENTAL FANS BY INSTALLING CONTRACTOR

Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	✓	3.5
BATH	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-2	BY INSTALLING CONTRACTOR	50	✓	3.5
W/R	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE 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: 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: June-21

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
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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 87522 Model: 4506 Builder: ROYAL PINE HOMES Date: 2021-06-04

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1497	9	13473
First	1497	11	16467
Second	1851	9	16659
Third	0	9	0
Fourth	0	9	0
		Total:	46,599.0 ft³
		Total:	1319.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.233
SUMMER NATURAL AIR CHANGE RATE	0.073

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-21	43	78
Summer DTDc	24	31	7	13

5.2.3.1 Heat Loss due to Air Leakage

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

0.233 x 366.54 x 43 °C x 1.2 = 4426 W

= **15101 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.073 x 366.54 x 7 °C x 1.2 = 227 W

= **775 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

80 CFM x 78 °F x 1.08 x 0.25 = **1670 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

80 CFM x 13 °F x 1.08 x 0.25 = **275 Btu/h**

5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)

$$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$$

Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL_{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)
1	0.5	15,101	9,509	0.794
2	0.3		16,432	0.276
3	0.2		16,689	0.181
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: 4506 **BUILDER:** ROYAL PINE HOMES
SFQT: 3348 **LO#** 87522 **SITE:** CENTREFIELD (WEST GORMLEY)

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-6	OUTDOOR DESIGN TEMP.	88
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):	46599.0	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: 38.0 ft	EXPOSED PERIMETER:	188.0 ft

2012 OBC - COMPLIANCE PACKAGE **Component**	**Compliance Package SB-12 PERFORMANCE**	
	Nominal	**Min. Eff.**
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
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	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

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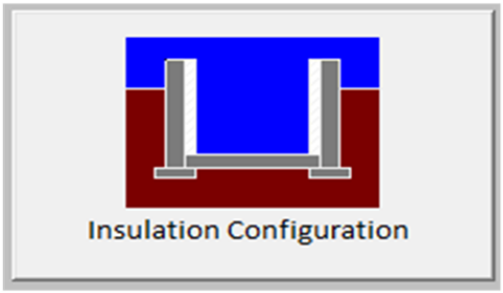
Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

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

Foundation Dimensions		
Floor Length (m):	**17.1**	 Insulation Configuration
Floor Width (m):	**11.6**	
Exposed Perimeter (m):	**0.0**	
Wall Height (m):	**2.7**	
Depth Below Grade (m):	**1.83**	
Window Area (m^2):	**1.9**	
Door Area (m^2):	**1.9**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):		**1898**

TYPE: 4506
LO# 87522

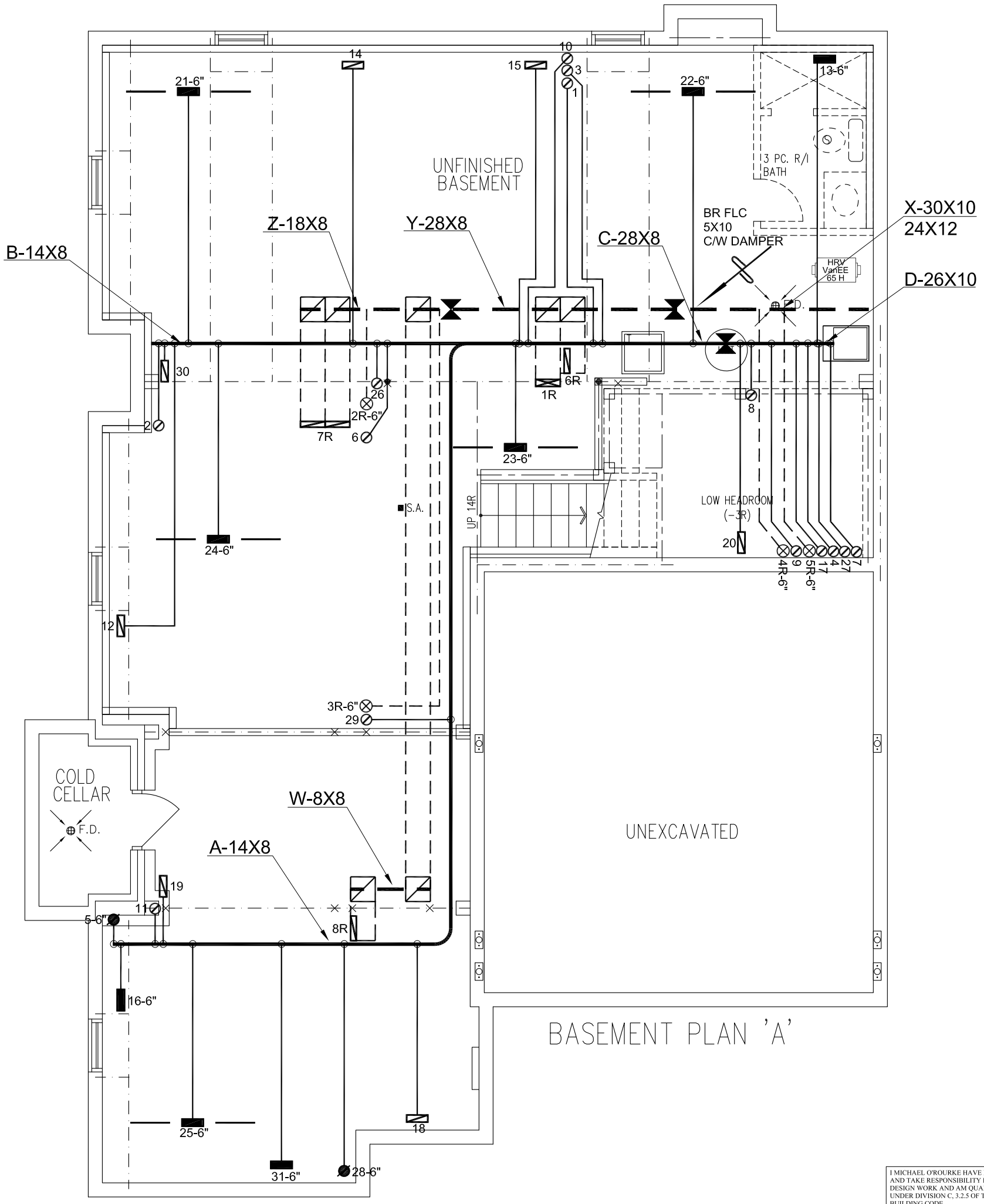
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Richmond Hill
Weather Station Location:	Open flat terrain, grass
Anemometer height (m):	10
Local Shielding	
Building Site:	Suburban, forest
Walls:	Heavy
Flue:	Heavy
Highest Ceiling Height (m):	7.01
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	1319.5
Air Leakage/Ventilation	
Air Tightness Type:	Energy Star Detached (2.5 ACH)
Custom BDT Data:	ELA @ 10 Pa. 1231.8 cm^2
	2.50 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 37.5 / Total Exhaust 37.5
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.233**
Cooling Air Leakage Rate (ACH/H):	**0.073**

TYPE: 4506
LO# 87522



BASEMENT PLAN '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
	REVISIONS	
3.	REVISED AS PER CAD	JUNE/2021
2.	REVISED AS PER ARCHITECTURALS	APR/2021
1.	REVISED TO PERFORMANCE	SEPT/2020

Client
ROYAL PINE HOMES

Project Name
CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO

4506 3348 sqft

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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.

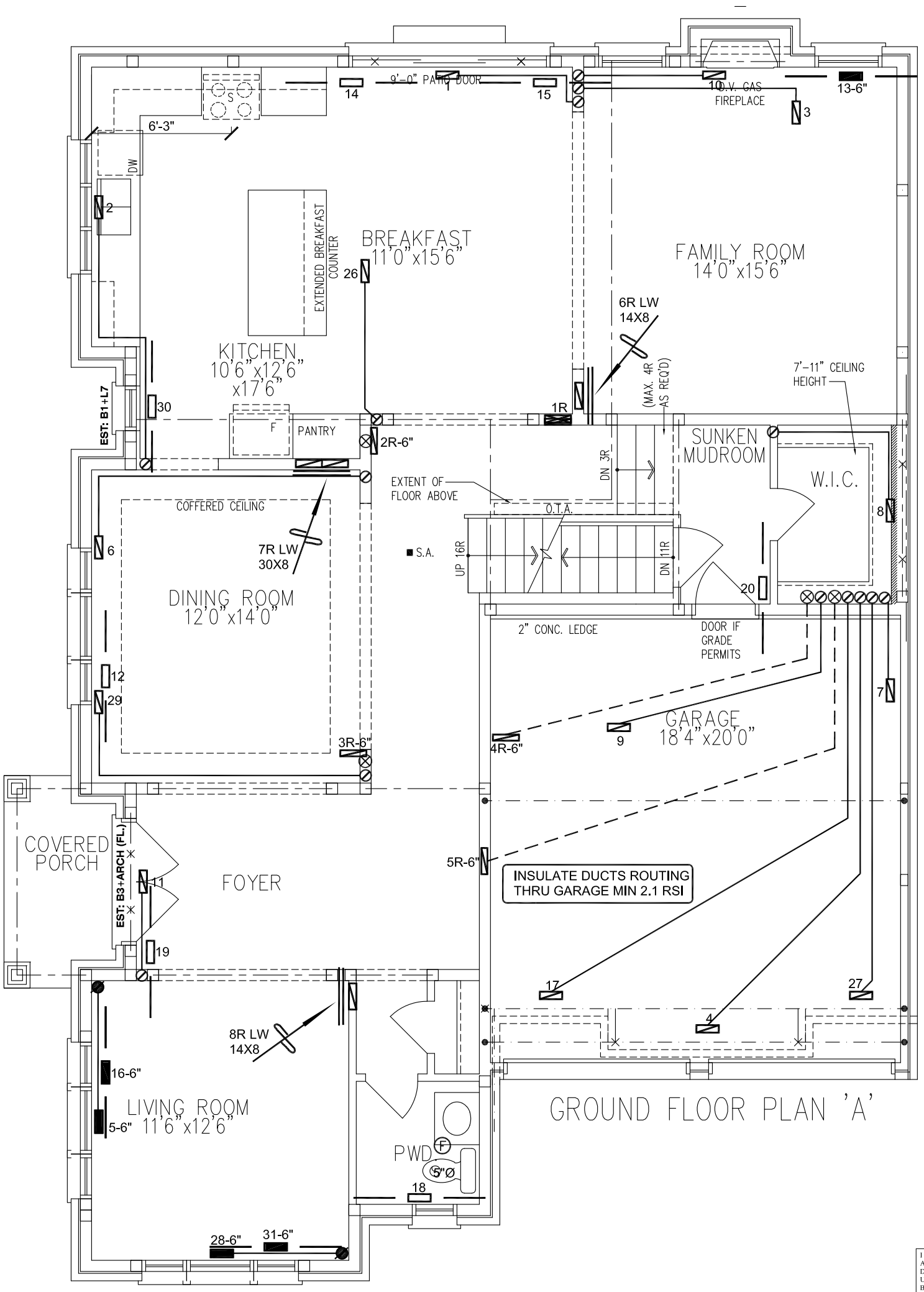
HEAT LOSS 59893 BTU/H		
UNIT DATA		
MAKE	CARRIER	
MODEL	59TN6A-080-14V	
INPUT	80	MBTU/H
OUTPUT	78	MBTU/H
COOLING	3.5	TONS
FAN SPEED	1370	cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	16	5	5
1ST FLOOR	10	3	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 SEPT/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 87522



GROUND FLOOR PLAN 'A'

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Michael O'Rourke

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.	REVISED AS PER CAD	JUNE/2021
2.	REVISED AS PER ARCHITECTURALS	APR/2021
1.	REVISED TO PERFORMANCE	SEPT/2020

REVISIONS

Client

ROYAL PINE HOMES

Project Name

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RICHMOND HILL, ONTARIO

4506 3348 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

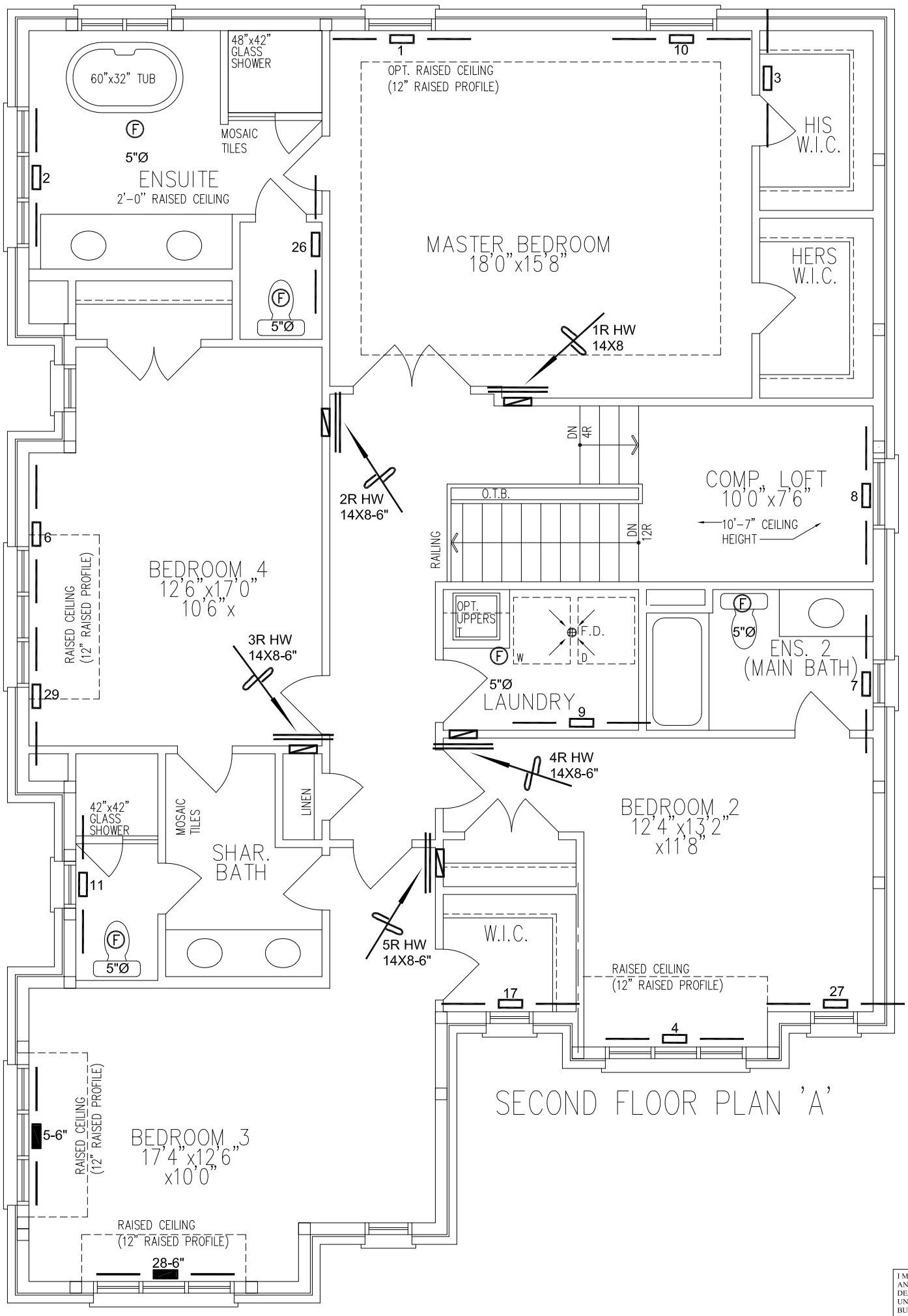
FIRST FLOOR HEATING LAYOUT

Date SEPT/2020

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 87522



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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

No.	Description	Date
3.	REVISED AS PER CAD	JUNE/2021
2.	REVISED AS PER ARCHITECTURALS	APR/2021
1.	REVISED TO PERFORMANCE	SEPT/2020

REVISIONS

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Sheet Title

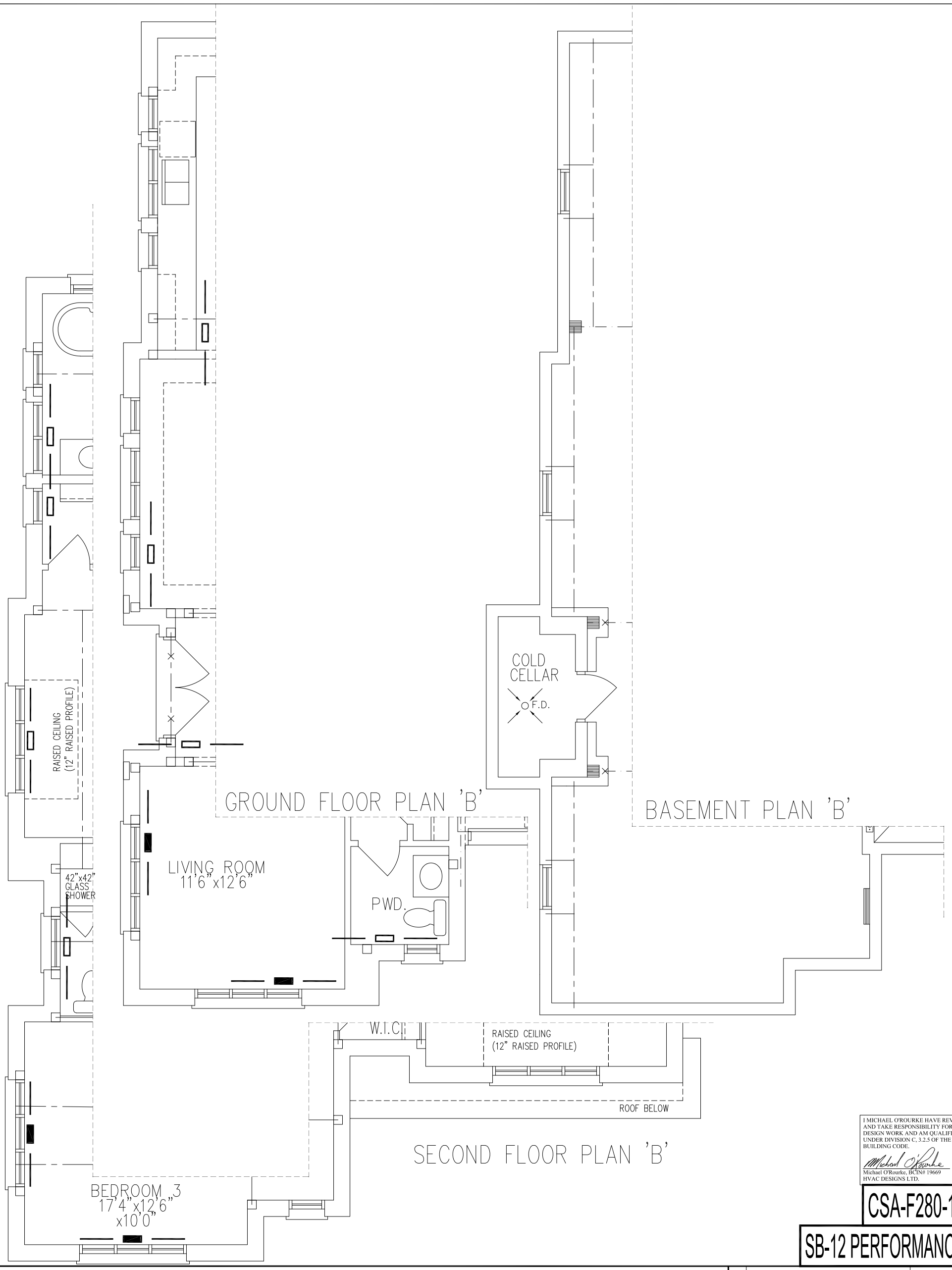
SECOND FLOOR HEATING LAYOUT

Date SEPT/2020

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 87522



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CSA-F280-12

SB-12 PERFORMANCE

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

REVISIONS

No.	Description	Date
3.	REVISED AS PER CAD	JUNE/2021
2.	REVISED AS PER ARCHITECTURALS	APR/2021
1.	REVISED TO PERFORMANCE	SEPT/2020

Client

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Sheet Title

THIRD FLOOR HEATING LAYOUT

Date SEPT/2020

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 87522