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:** 2009 END FIN BSMT & OPT 2ND **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.

September 10, 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.

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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: CENTREFIELD (WEST GORMLEY) | FIN BSMT & OPT 2ND | DATE: Sep-21 | WINTER NATURAL AIR CHANGE RATE 0.275 | HEAT LOSS ΔT °F. 78 | CSA-F280-12
BUILDER: ROYAL PINE HOMES | TYPE: 2009 END | GFA: 1700 | LO# 87539 | SUMMER NATURAL AIR CHANGE RATE 0.083 | HEAT GAIN ΔT °F. 13 | SB-12 PERFORMANCE

ROOM USE			MBR			ENS				BED-2			BED-3				BATH					B-BATH			
EXP. WALL			14			28				10			46				0					0			
CLG. HT.			8			8				8			9				8					9			
FACTORS																									
GRS.WALL AREA	LOSS	GAIN	112			224				80			414				0					0			
GLAZING			LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN			LOSS	GAIN				LOSS	GAIN		
NORTH	21.8	16.0	0	0	0	0	0	0		0	0	0	0	0	0		0	0	0			0	0	0	
EAST	21.8	41.6	0	0	0	0	0	0		28	610	1163	36	784	1496		0	0	0			0	0	0	
SOUTH	21.8	24.9	0	0	0	7	152	174		0	0	0	13	283	324		0	0	0			0	0	0	
WEST	21.8	41.6	28	610	1163	9	196	374		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	
DOORS	25.8	4.3	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	84	353	58	208	875	144		52	219	36	365	1535	253		0	0	0			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	
EXPOSED CLG	1.3	0.6	382	502	225	78	103	46		177	233	104	200	263	118		77	101	45			0	0	0	
NO ATTIC EXPOSED CLG	2.8	1.3	0	0	0	0	0	0		0	0	0	20	56	25		0	0	0			0	0	0	
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0		177	462	76	21	55	9		50	131	21			0	0	0	
BASEMENT/CRAWL HEAT LOSS				0			0				0			0				0					285		
SLAB ON GRADE HEAT LOSS				0			0				0			0				0					0		
SUBTOTAL HT LOSS				1465			1326				1523			2976				232					285		
SUB TOTAL HT GAIN					1446			738				1380			2224				67					0	
LEVEL FACTOR / MULTIPLIER			0.20	0.22		0.20	0.22			0.20	0.22		0.20	0.22			0.20	0.22				0.50	0.76		
AIR CHANGE HEAT LOSS				328			297				341			667				52					216		
AIR CHANGE HEAT GAIN					71			36				68			110				3					0	
DUCT LOSS				0			0				186			364				28					0		
DUCT GAIN					0			0				261			350				7					0	
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240		0		0			0		0	
HEAT GAIN APPLIANCES/LIGHTS					923			0				923			923				0					0	
TOTAL HT LOSS BTU/H				1793			1623				2051			4007				312					501		
TOTAL HT GAIN x 1.3 BTU/H					3797			1007				3733			5000				100					0	

ROOM USE			K/B/G						PWD			FOY						BAS		
EXP. WALL			54						12			46						112		
CLG. HT.			10						11			11						9		
FACTORS																				
GRS.WALL AREA	LOSS	GAIN	545						133			511						672		
GLAZING			LOSS	GAIN					LOSS	GAIN		LOSS	GAIN					LOSS	GAIN	
NORTH	21.8	16.0	0	0	0				0	0	0	0	0	0				0	0	0
EAST	21.8	41.6	0	0	0				0	0	0	25	545	1039				0	0	0
SOUTH	21.8	24.9	49	1067	1220				0	0	0	0	0	0				3	65	75
WEST	21.8	41.6	78	1699	3241				0	0	0	0	0	0				7	152	291
SKYLT.	35.8	101.2	0	0	0				0	0	0	0	0	0				0	0	0
DOORS	25.8	4.3	0	0	0				20	517	85	40	1034	170				20	517	85
NET EXPOSED WALL	4.2	0.7	418	1760	289				113	476	78	446	1874	308				0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	0	0	0				0	0	0	0	0	0				336	1238	204
EXPOSED CLG	1.3	0.6	0	0	0				0	0	0	0	0	0				0	0	0
NO ATTIC EXPOSED CLG	2.8	1.3	31	87	39				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
BASEMENT/CRAWL HEAT LOSS				0						0			0						3298	
SLAB ON GRADE HEAT LOSS				0						0			0						5271	
SUBTOTAL HT LOSS				4613						993			3452							
SUB TOTAL HT GAIN					4790						163			1517						654
LEVEL FACTOR / MULTIPLIER			0.30	0.28					0.30	0.28		0.30	0.28					0.50	0.76	
AIR CHANGE HEAT LOSS				1287						277			963						3996	
AIR CHANGE HEAT GAIN					236						8			75						32
DUCT LOSS				0						0			0						0	
DUCT GAIN					0						0			0						0
HEAT GAIN PEOPLE	240		0		0				0		0	0		0				0		0
HEAT GAIN APPLIANCES/LIGHTS					923						0			0						0
TOTAL HT LOSS BTU/H				5900						1270			4416						9267	
TOTAL HT GAIN x 1.3 BTU/H					7734						223			2070						892

TOTAL HEAT GAIN BTU/H: 24776 | TONS: 2.06 | LOSS DUE TO VENTILATION LOAD BTU/H: 1336 | STRUCTURAL HEAT LOSS: 31141 | TOTAL COMBINED HEAT LOSS BTU/H: 32477

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: 2009 END — FIN BSMT & OPT 2ND — DATE: Sep-21 — GFA: 1700 — LO# 87539

HEATING CFM	820	COOLING CFM	820
TOTAL HEAT LOSS	31,141	TOTAL HEAT GAIN	24,556
AIR FLOW RATE CFM	26.33	AIR FLOW RATE CFM	33.39

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

**CARRIER
59TN6A-060-14V 60
FAN SPEED
LOW 820
MEDLOW 0
MEDIUM 0
MEDIUM HIGH 0
HIGH 1520

AFUE = 97 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 58,000

DESIGN CFM = 820
CFM @ .6 " E.S.P.

TEMPERATURE RISE 65 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	8	6	4
R/A	0	0	4	1	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	4	5	6	7	8	10	13	14	15	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-3	BATH	BED-2	MBR	K/B/G	K/B/G	K/B/G	PWD	FOY	FOY	BAS	B-BATH	BAS	BAS
RM LOSS MBH.	0.90	1.62	1.03	2.00	2.00	0.31	1.03	0.90	1.97	1.97	1.97	1.27	2.21	2.21	3.09	0.50	3.09	3.09
CFM PER RUN HEAT	24	43	27	53	53	8	27	24	52	52	52	33	58	58	81	13	81	81
RM GAIN MBH.	1.90	1.01	1.87	2.50	2.50	0.10	1.87	1.90	2.58	2.58	2.58	0.22	1.03	1.03	0.30	0.00	0.30	0.30
CFM PER RUN COOLING	63	34	62	83	83	3	62	63	86	86	86	7	35	35	10	0	10	10
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.17	0.16	0.16
ACTUAL DUCT LGH.	33	30	52	53	50	30	47	39	4	23	19	22	36	39	31	11	24	33
EQUIVALENT LENGTH	110	170	150	190	180	140	130	140	150	170	150	160	110	110	160	140	180	120
TOTAL EFFECTIVE LENGTH	143	200	202	243	230	170	177	179	154	193	169	182	146	149	191	151	204	153
ADJUSTED PRESSURE	0.12	0.09	0.09	0.07	0.07	0.1	0.1	0.1	0.11	0.08	0.1	0.09	0.12	0.12	0.08	0.11	0.08	0.11
ROUND DUCT SIZE	5	4	5	6	6	4	5	5	6	6	6	4	5	5	6	4	6	6
HEATING VELOCITY (ft/min)	176	493	198	270	270	92	198	176	265	265	265	379	426	426	413	149	413	413
COOLING VELOCITY (ft/min)	463	390	455	423	423	34	455	463	438	438	438	80	257	257	51	0	51	51
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10
TRUNK	C	C	B	A	A	B	B	C	B	C	C	B	A	A	C	B	C	A

RUN #	
ROOM NAME	
RM LOSS MBH.	
CFM PER RUN HEAT	
RM GAIN MBH.	
CFM PER RUN COOLING	
ADJUSTED PRESSURE	
ACTUAL DUCT LGH.	
EQUIVALENT LENGTH	
TOTAL EFFECTIVE LENGTH	
ADJUSTED PRESSURE	
ROUND DUCT SIZE	
HEATING VELOCITY (ft/min)	
COOLING VELOCITY (ft/min)	
OUTLET GRILL SIZE	
TRUNK	

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	303	0.07	9.3	10	x	8	545	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	463	0.07	10.9	14	x	8	595	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	357	0.08	9.5	10	x	8	643	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	0	0.00	0	0	x	8	0	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	0	0.05	0	0	x	8	0
TRUNK X	820	0.05	14.6	24	x	8	615
TRUNK Y	415	0.05	11.3	14	x	8	534
TRUNK Z	0	0.05	0	0	x	8	0
DROP	820	0.05	14.6	24	x	10	492

RETURN AIR #	1	2	3	4	5											BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	95	115	75	75	340	0	0	0	0	0	0	0	0	0	0	120
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.	70	47	56	55	21	1	1	1	1	1	1	1	1	1	1	26
EQUIVALENT LENGTH	205	165	245	175	150	0	0	0	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	275	212	301	230	171	1	1	1	1	1	1	1	1	1	1	171
ADJUSTED PRESSURE	0.05	0.07	0.05	0.06	0.09	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6.5	6.5	6	5.7	9.1	0	0	0	0	0	0	0	0	0	0	6.2
INLET GRILL SIZE	8	8	8	8	6	0	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	60	0	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

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TYPE: 2009 END LO # 87539
SITE NAME: CENTREFIELD (WEST GORMLEY) FIN BSMT & OPT 2ND

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	2	@ 10.6 cfm	21.2	cfm
Kitchen & Bathrooms	6	@ 10.6 cfm	63.6	cfm
Other Rooms	2	@ 10.6 cfm	21.2	cfm
Table 9.32.3.A.		TOTAL	148.4	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	**63.6**	**cfm**

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	148.4	cfm
Less Principal Ventil. Capacity	63.6	cfm
Required Supplemental Capacity	84.8	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 65H Location: BSMT

63.6 cfm [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
63.6 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
PWD	BY INSTALLING CONTRACTOR	50	✓	3.5
B-BATH	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: September-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
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#: 87539 Model: 2009 END Builder: ROYAL PINE HOMES Date: 9/10/2021

Volume Calculation

House Volume

Level	Floor Area (ft^2)	Floor Height (ft)	Volume (ft^3)
Bsmt	754	9	6786
First	754	10	7615.4
Second	954	8	7632
Third	0	9	0
Fourth	0	9	0
		Total:	22,033.4 ft^3
		Total:	623.9 m^3

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.275
SUMMER NATURAL AIR CHANGE RATE	0.083

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

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

0.275 x 173.31 x 43 °C x 1.2 = 2469 W

= **8425 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.083 x 173.31 x 7 °C x 1.2 = 123 W

= **420 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

64 CFM x 78 °F x 1.08 x 0.25 = **1336 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

64 CFM x 13 °F x 1.08 x 0.25 = **220 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	8,425	5,556	0.758
2	0.3		9,059	0.279
3	0.2		7,522	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:	2009 END		FIN BSMT & OPT 2ND	**BUILDER:**	ROYAL PINE HOMES
SFQT:	1700	**LO#**	87539	**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:	ATTACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.00	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	22033.4	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 52.0 ft	WIDTH: 20.0 ft	EXPOSED PERIMETER:	112.0 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

Michael O'Rourke.

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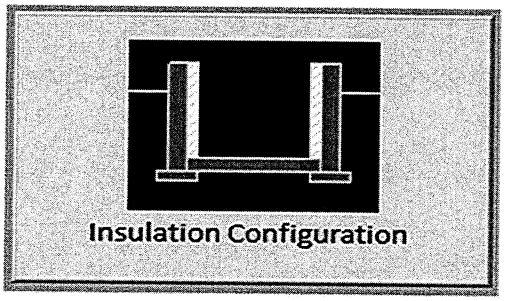
Ajax ON, L1S 2E2
905-619-2300

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	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):	**15.8**	 Insulation Configuration
Floor Width (m):	**6.1**	
Exposed Perimeter (m):	**34.1**	
Wall Height (m):	**2.7**	
Depth Below Grade (m):	**1.83**	
Window Area (m^2):	**0.9**	
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):	**1050**	

TYPE: 2009 END
LO# 87539

FIN BSMT & OPT 2ND

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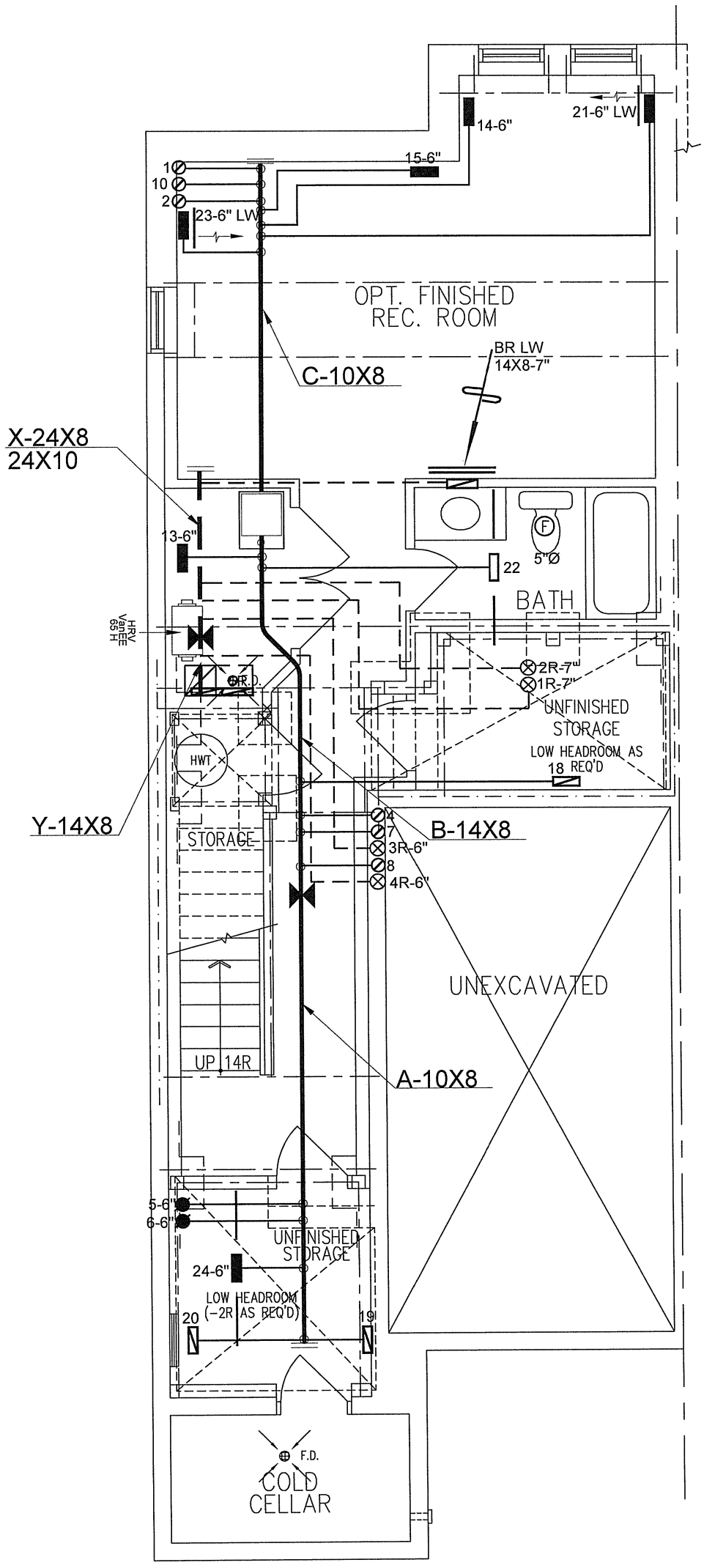
Air Infiltration Residential Load Calculator

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):	6.43	
Building Configuration		
Type:	Semi	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m^3):	623.9	
Air Leakage/Ventilation		
Air Tightness Type:	Energy Star Attached (3.0 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	698.9 cm^2
	3.00	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust
	30.0	30.0
Flue Size		
Flue #:	#1 #2 #3 #4	
Diameter (mm):	0 0 0 0	
Natural Infiltration Rates		
Heating Air Leakage Rate (ACH/H):	**0.275**	
Cooling Air Leakage Rate (ACH/H):	**0.083**	

TYPE: 2009 END
LO# 87539

FIN BSMT & OPT 2ND



OPT. FINISHED BASEMENT PLAN, EL. 'A' & 'B' – END COND.

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.	REVISED ACH	SEPT/2020
1.	REVISED TO PERFORMANCE	SEPT/2020

REVISIONS

Client
ROYAL PINE HOMES

Project Name
CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO

FIN BSMT & OPT 2ND
2009 END 1700 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.

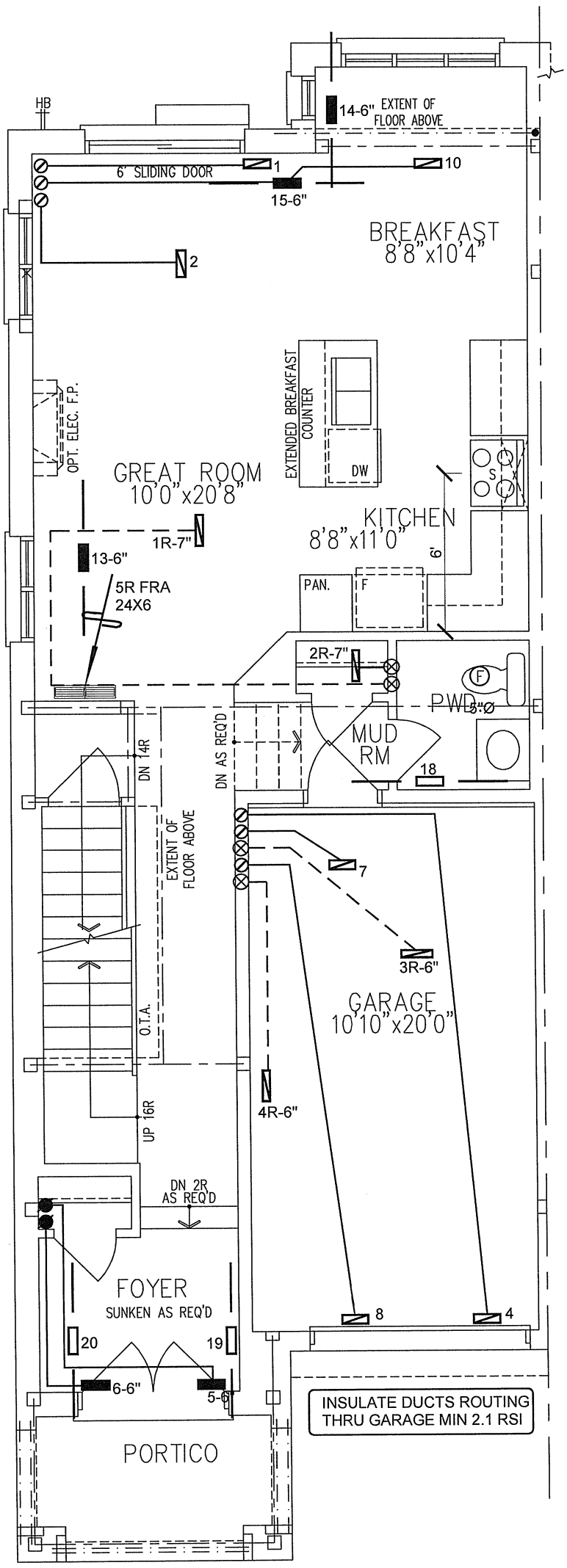
HEAT LOSS 32,477 BTU/H	
UNIT DATA	
MAKE	CARRIER
MODEL	59TN6A-060-14V
INPUT	60 MBTU/H
OUTPUT	58 MBTU/H
COOLING	2.0 TONS
FAN SPEED	820 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	8	4	2
1ST FLOOR	6	1	2
BASEMENT	4	1	1

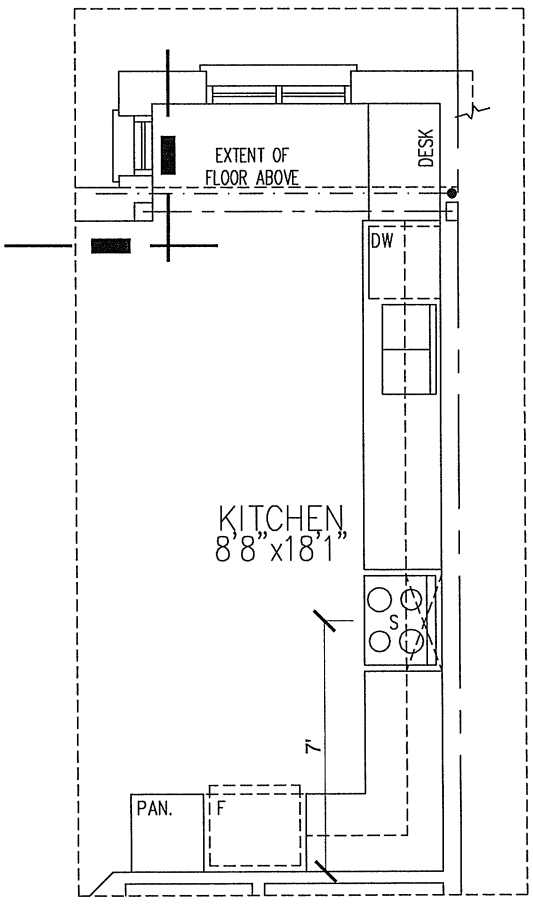
ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

Sheet Title
BASEMENT HEATING LAYOUT

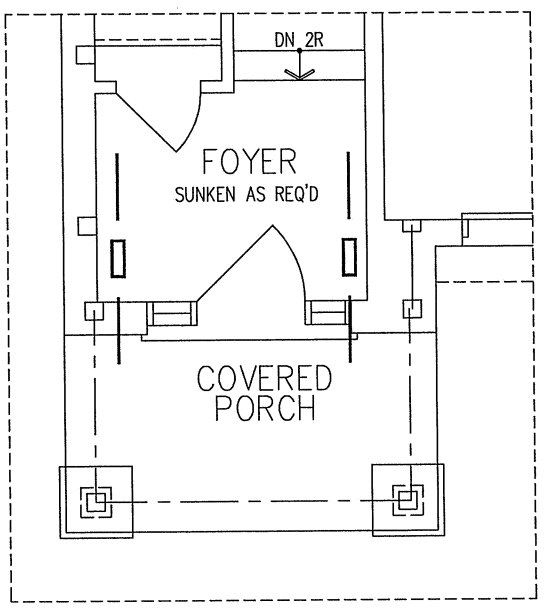
Date SEPT/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 87539



GROUND FLOOR PLAN,
EL. 'A' – END



PART. GROUND FLOOR PLAN
– OPT. KITCHEN LAYOUT



GROUND FLOOR PLAN, EL.
'B' – END

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.

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HVAC DESIGNS LTD.

CSA-F280-12

SB-12 PERFORMANCE

HVAC LEGEND

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

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REVISIONS

Client
ROYAL PINE HOMES

Project Name
CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO

FIN BSMT & OPT 2ND
2009 END 1700 sqft

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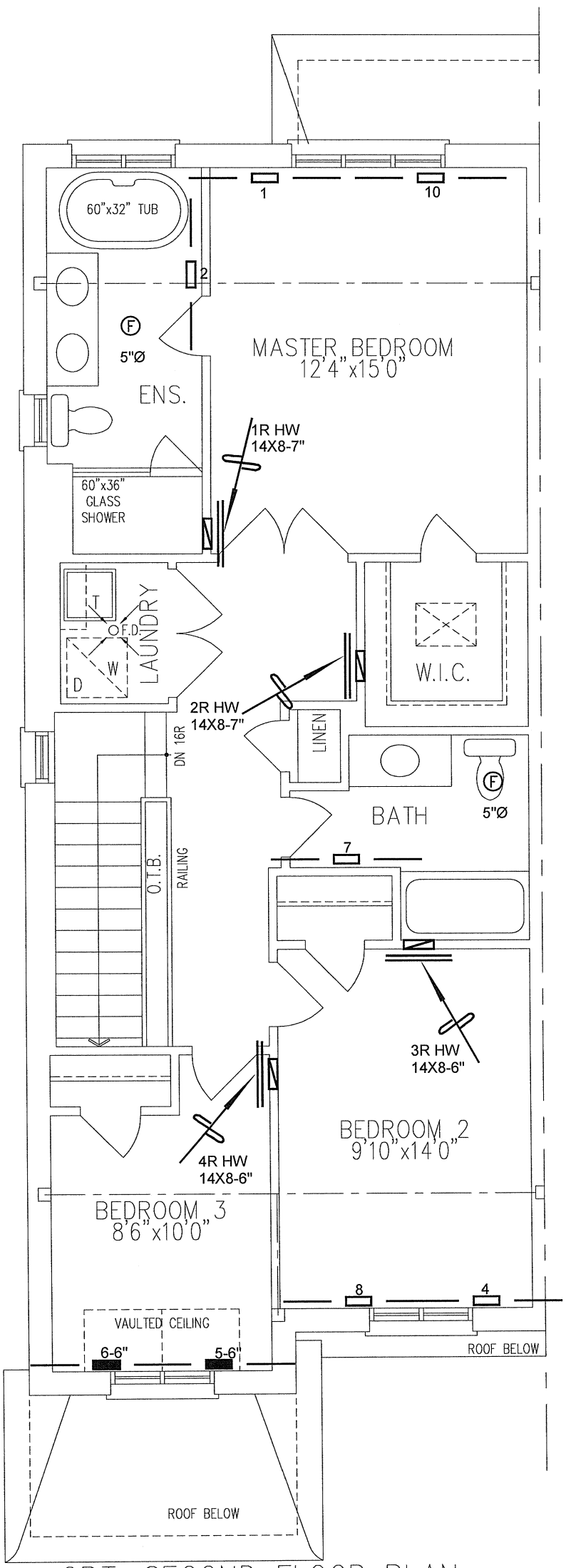
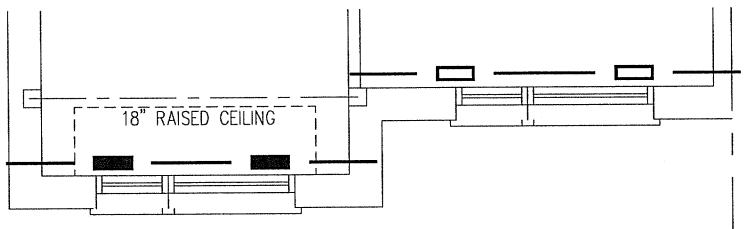
Sheet Title
FIRST FLOOR HEATING LAYOUT

Date SEPT/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 87539



OPT. SECOND FLOOR PLAN,
EL. 'A1/A2' – END



SECOND FLOOR PLAN, EL.
'B' – END

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Michael O'Rourke, BCIN# 19669
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CSA-F280-12

SB-12 PERFORMANCE

HVAC LEGEND

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Sheet Title
SECOND FLOOR HEATING LAYOUT

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LO# 87539