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**		
INNINFILL				

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:** RL-6E **Project:** ALCONA

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.

July 6, 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.

HVA 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: ALCONA | DATE: Jul-22 | WINTER NATURAL AIR CHANGE RATE 0.439 | HEAT LOSS ΔT °F. 83 | CSA-F280-12

BUILDER: BAYVIEW WELLINGTON HOMES | TYPE: RL-6E | GFA: 2767 | LO# 97836 | SUMMER NATURAL AIR CHANGE RATE 0.097 | HEAT GAIN ΔT °F. 9 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			BATH			LOFT				ENS2				
EXP. WALL			37			23				41			13			31			6			24				6				
CLG. HT.			9			9				9			9			9			9			9				9				
	FACTORS																													
GRS.WALL AREA	LOSS	GAIN	333			207				369			117			279			54			216				54				
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		
NORTH	23.3	15.0	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	23.3	40.5	39	909	1581	0	0	0		33	769	1338	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SOUTH	23.3	23.9	0	0	0	13	303	311		0	0	0	16	373	382	0	0	0	8	186	191	0	0	0		0	0	0		
WEST	23.3	40.5	0	0	0	0	0	0		0	0	0	0	0	0	28	652	1135	0	0	0	28	652	1135		9	210	365		
SKYLT.	40.8	99.8	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	22.0	2.4	20	439	49	0	0	0		20	439	49	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
NET EXPOSED WALL	4.9	0.5	274	1339	148	194	948	105		316	1544	171	101	493	55	251	1226	136	46	225	25	188	918	102		45	220	24		
NET EXPOSED BSMT WALL ABOVE GR	3.9	0.4	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	1.4	0.5	423	594	223	130	183	68		0	0	0	0	0	0	0	0	0	0	0	0	143	201	75		0	0	0		
NO ATTIC EXPOSED CLG	3.0	1.1	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	2.8	0.3	0	0	0	0	0	0		0	0	0	0	0	0	130	391	147	0	0	0	0	0	0		0	0	0		
BASEMENT/CRAWL HEAT LOSS				0			0				0			0			0			0			0				0			
SLAB ON GRADE HEAT LOSS				0			0				0			0			0			0			0				0			
SUBTOTAL HT LOSS				3281			1433				2752			866			2270			411			1772				430			
SUB TOTAL HT GAIN					2001			484				1557			437			1418			216			1312				389		
LEVEL FACTOR / MULTIPLIER			0.10	0.34		0.10	0.34			0.20	0.67		0.20	0.67		0.20	0.67		0.20	0.67		0.10	0.34			0.20	0.67			
AIR CHANGE HEAT LOSS				1122			490				1847			581			1523			276			606				288			
AIR CHANGE HEAT GAIN					107			26				83			23			76			12			70				21		
DUCT LOSS				0			0				0			0			0			0			0				0			
DUCT GAIN					0			0				0			0			0			0			0				0		
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	0		0		0		0		
HEAT GAIN APPLIANCES/LIGHTS					398			398				398			398			398			398			398				398		
TOTAL HT LOSS BTU/H				4403			1924				4598			1447			3793			687			2378				718			
TOTAL HT GAIN x 1.3 BTU/H					3881			1180				2962			1428			2771			813			2314				1050		

ROOM USE			MUD			KT/BR			GRT			LAUN			W/R2			FOY									BAS		
EXP. WALL			15			24			39			7			0			7									92		
CLG. HT.			10			10			10			10			9			10									9		
	FACTORS																												
GRS.WALL AREA	LOSS	GAIN	150			240			390			70			0			70									552		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN							LOSS	GAIN	
NORTH	23.3	15.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							0	0	0
EAST	23.3	40.5	0	0	0	0	0	0	39	909	1581	0	0	0	0	0	0	20	466	811							4	93	162
SOUTH	23.3	23.9	0	0	0	22	513	526	22	513	526	13	303	311	0	0	0	0	0	0							8	186	191
WEST	23.3	40.5	13	303	527	23	536	933	0	0	0	0	0	0	0	0	0	0	0	0							0	0	0
SKYLT.	40.8	99.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							0	0	0
DOORS	22.0	2.4	20	439	49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							0	0	0
NET EXPOSED WALL	4.9	0.5	117	572	63	195	953	105	329	1607	178	57	278	31	0	0	0	40	195	22							0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.9	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							276	1087	120
EXPOSED CLG	1.4	0.5	0	0	0	0	0	0	0	0	0	0	0	0	80	112	42	0	0	0							0	0	0
NO ATTIC EXPOSED CLG	3.0	1.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							0	0	0
EXPOSED FLOOR	2.8	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0								3175		
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0										
SUBTOTAL HT LOSS				1314			2001			3028			581			112			881								4542		
SUB TOTAL HT GAIN					639			1563			2285			341			42			857									474	
LEVEL FACTOR / MULTIPLIER			0.30	0.87		0.30	0.87		0.30	0.87		0.30	0.87		0.10	0.34		0.30	0.87								0.40	1.99	
AIR CHANGE HEAT LOSS				1140			1736			2628			504			38			764								9030		
AIR CHANGE HEAT GAIN					34			84			122			18			2			46									25	
DUCT LOSS				0			0			0			0			0			0								0		
DUCT GAIN					0			0			0			0			0			0									0	
HEAT GAIN PEOPLE	240		0		0	0		0	0		0	0		0	0		0	0		0							0		0	
HEAT GAIN APPLIANCES/LIGHTS					398			398			398			398			398			398									398	
TOTAL HT LOSS BTU/H				2453			3737			5656			1086			151			1645								13572		
TOTAL HT GAIN x 1.3 BTU/H					1392			2658			3646			985			575			1691									1166	

TOTAL HEAT GAIN BTU/H: 28710 TONS: 2.39 LOSS DUE TO VENTILATION LOAD BTU/H: 1786 STRUCTURAL HEAT LOSS: 48249 TOTAL COMBINED HEAT LOSS BTU/H: 50034

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: ALCONA
BUILDER: BAYVIEW WELLINGTON HOMES

TYPE: RL-6E DATE: Jul-22 GFA: 2767 LO# 97836

HEATING CFM	985	COOLING CFM	985
TOTAL HEAT LOSS	48,249	TOTAL HEAT GAIN	28,512
AIR FLOW RATE CFM	20.42	AIR FLOW RATE CFM	34.55

furnace pressure	0.6
furnace filter	0.05
a/c coil pressure	0.2
available pressure for s/a & r/a	0.35
plenum pressure s/a	0.18
max s/a dif press. loss	0.02
min adjusted pressure s/a	0.16
r/a pressure	0.17
r/a grille press. Loss	0.02
adjusted pressure r/a	0.15

$LENNOX
ML196UH070XE36B 70
FAN SPEED
LOW 0
MEDLOW 0
MEDIUM 985
MEDIUM HIGH 1110
HIGH 1275

AFUE = 96 %
INPUT (BTU/H) = 66,000
OUTPUT (BTU/H) = 63,900
DESIGN CFM = 985
CFM @ .6 " E.S.P.
TEMPERATURE RISE 60 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	5	7	7	3
R/A	0	2	3	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	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23
ROOM NAME	MBR	ENS	BED-2	BED-2	BED-3	BED-4	BATH	LOFT	BED-4	MBR	ENS2	MUD	GRT	KT/BR	KT/BR	GRT	LAUN	W/R2	FOY	BAS	BAS	BAS
RM LOSS MBH.	2.20	1.92	2.30	2.30	1.45	1.90	0.69	2.38	1.90	2.20	0.72	2.45	2.83	1.87	1.87	2.83	1.09	0.15	1.65	4.52	4.52	4.52
CFM PER RUN HEAT	45	39	47	47	30	39	14	49	39	45	15	50	58	38	38	58	22	3	34	92	92	92
RM GAIN MBH.	1.94	1.18	1.48	1.48	1.43	1.39	0.81	2.31	1.39	1.94	1.05	1.39	1.82	1.33	1.33	1.82	0.98	0.58	1.69	0.39	0.39	0.39
CFM PER RUN COOLING	67	41	51	51	49	48	28	80	48	67	36	48	63	46	46	63	34	20	58	13	13	13
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	0.17	0.16	0.16	0.16
ACTUAL DUCT LGH.	77	69	76	69	39	53	48	106	58	91	66	25	45	21	18	35	26	90	39	17	23	38
EQUIVALENT LENGTH	210	200	180	160	180	190	190	200	170	200	140	110	100	100	110	120	130	200	120	120	140	110
TOTAL EFFECTIVE LENGTH	287	269	256	229	219	243	238	306	228	291	206	135	145	121	128	155	156	290	159	137	163	148
ADJUSTED PRESSURE	0.06	0.06	0.07	0.08	0.08	0.07	0.07	0.06	0.08	0.06	0.08	0.13	0.12	0.14	0.13	0.11	0.11	0.06	0.11	0.12	0.1	0.11
ROUND DUCT SIZE	6	5	5	5	5	5	4	6	5	6	4	4	5	4	4	5	4	4	5	6	6	6
HEATING VELOCITY (ft/min)	229	286	345	345	220	286	161	250	286	229	172	574	426	436	436	426	252	34	250	469	469	469
COOLING VELOCITY (ft/min)	342	301	374	374	360	352	321	408	352	342	413	551	463	528	528	463	390	229	426	66	66	66
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10
TRUNK	B	A	B	B	B	A	B	A	A	B	A	D	E	D	D	E	E	A	E	D	E	E

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	184	0.06	8	8	x	8	414	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	228	0.06	8.7	10	x	8	410	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	412	0.06	10.8	16	x	8	464	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	218	0.12	7.2	8	x	8	491	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	356	0.10	9	10	x	8	641	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	574	0.10	10.8	14	x	8	738	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	985	0.05	15.7	28	x	8	633
TRUNK Y	770	0.05	14.3	24	x	8	578
TRUNK Z	325	0.05	10.4	12	x	8	488
DROP	985	0.05	15.7	24	x	10	591

RETURN AIR #	1	2	3	4	5	6										BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	120	120	85	85	85	360	0	0	0	0	0	0	0	0	0	130
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.	75	86	55	54	36	25	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	205	235	175	230	175	160	0	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	280	321	230	284	211	185	1	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.05	0.05	0.06	0.05	0.07	0.08	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	7.1	7.1	6	6.3	5.8	9.6	0	0	0	0	0	0	0	0	0	6.2
INLET GRILL SIZE	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	30	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: RL-6E LO # 97836
SITE NAME: ALCONA

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES — 9.32.3.1(1)

- a) [✓] Direct vent (sealed combustion) only
- b) [ ] Positive venting induced draft (except fireplaces)
- c) [ ] Natural draft, B-vent or induced draft gas fireplace
- d) [ ] Solid Fuel (including fireplaces)
- e) [ ] No Combustion Appliances

HEATING SYSTEM

[✓] Forced Air [ ] Non Forced Air

[ ] Electric Space Heat

HOUSE TYPE — 9.32.1(2)

- [✓] I Type a) or b) appliance only, no solid fuel
- [ ] II Type I except with solid fuel (including fireplaces)
- [ ] III Any Type c) appliance
- [ ] IV Type I, or II with electric space heat
- [ ] Other: Type I, II or IV no forced air

SYSTEM DESIGN OPTIONS — O.N.H.W.P.

- [ ] 1 Exhaust only/Forced Air System
- [ ] 2 HRV with Ducting/Forced Air System
- [✓] 3 HRV Simplified/connected to forced air system
- [ ] 4 HRV with Ducting/non forced air system
- [ ] Part 6 Design

TOTAL VENTILATION CAPACITY — 9.32.3.3(1)

Basement + Master Bedroom	2	@ 21.2 cfm	42.4	cfm
Other Bedrooms	3	@ 10.6 cfm	31.8	cfm
Kitchen & Bathrooms	5	@ 10.6 cfm	53	cfm
Other Rooms	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.		TOTAL	190.8	cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED — 9.32.3.4.(1)

1	Bedroom	31.8	cfm
2	Bedroom	47.7	cfm
3	Bedroom	63.6	cfm
4	Bedroom	79.5	cfm
5	Bedroom	95.4	cfm
	TOTAL	**79.5**	**cfm**

SUPPLEMENTAL VENTILATION CAPACITY — 9.32.3.5.

Total Ventilation Capacity	190.8	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	111.3	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE V150H Location: BSMT

79.5 cfm [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
79.5 CFM	X	83 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
ENS2	BY INSTALLING CONTRACTOR	50	✓	3.5
W/R2	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: BAYVIEW WELLINGTON 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: July-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#: 97836 Model: RL-6E Builder: BAYVIEW WELLINGTON HOMES Date: 2022-07-06

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	964	9	8676
First	964	10	9640
Second	964	9	8676
Third	839	9	7551
Fourth	0	9	0
		Total:	34,543.0 ft³
		Total:	978.1 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.439
SUMMER NATURAL AIR CHANGE RATE	0.097

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-24	46	83
Summer DTDc	24	29	5	9

5.2.3.1 Heat Loss due to Air Leakage

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

0.439 x 271.71 x 46 °C x 1.2 = 6616 W

= 22575 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

= 0.097 x 271.71 x 5 °C x 1.2 = 162 W

= 551 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 83 °F x 1.08 x 0.25 = 1786 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 9 °F x 1.08 x 0.25 = 197 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	0.4	22,575	4,542	1.988
2	0.3		7,805	0.868
3	0.2		6,728	0.671
4	0.1		6,598	0.342
5	0		0	0.000

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

Michael O'Rourke
BCIN# 19669

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: RL-6E
SFQT: 2767 **LO#** 97836
BUILDER: BAYVIEW WELLINGTON HOMES
SITE: ALCONA

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-11	OUTDOOR DESIGN TEMP.	84
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.50

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	4
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	34543.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.60	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 47.0 ft	WIDTH: 21.0 ft	EXPOSED PERIMETER:	92.0 ft

2012 OBC - COMPLIANCE PACKAGE Component	Compliance Package A1	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20 ci	21.12
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value	-	-
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13
Windows and Sliding Glass Doors Maximum U-Value	0.28	-
Skylights Maximum U-Value	0.49	-
Space Heating Equipment Minimum AFUE	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

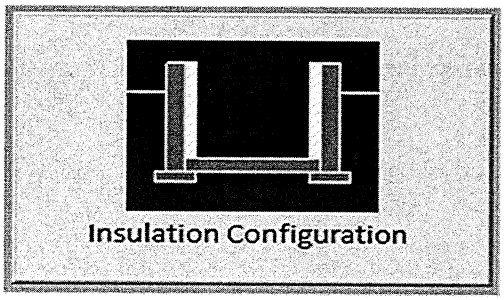
Michael O'Rourke

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:	Barrie
Site Description	
Soil Conductivity:	Normal conductivity: dry sand, loam, clay
Water Table:	Normal (7-10 m, 23-33 ft)

Foundation Dimensions		
Floor Length (m):	14.3	 Insulation Configuration
Floor Width (m):	6.4	
Exposed Perimeter (m):	28.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m^2):	1.1	
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):	**930**	

TYPE: RL-6E
LO# 97836

Michael O'Rourke BCIN #19669

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

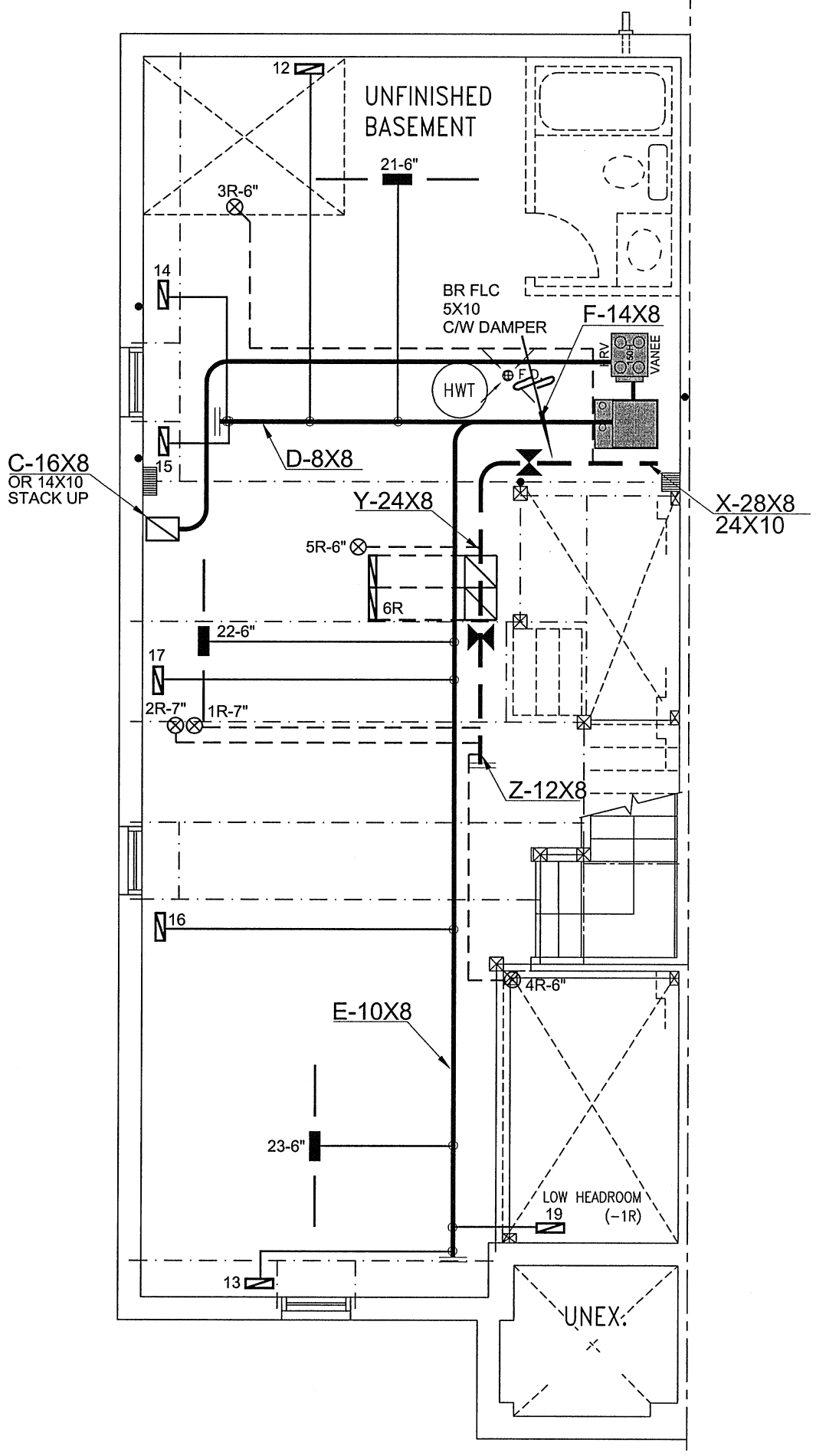
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Barrie
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):	9.45
Building Configuration	
Type:	Semi
Number of Stories:	Three
Foundation:	Full
House Volume (m^3):	978.1
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 1303.9 cm^2
	3.57 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):	**0.439**
Cooling Air Leakage Rate (ACH/H):	**0.097**

TYPE: RL-6E
LO# 97836

Michael O'Rourke BCIN# 19669



BASEMENT PLAN 'A' & 'B'

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
PACKAGE A1

HVAC LEGEND

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

No.	Description	Date
3.		
2.		
1.		

REVISIONS

Client
BAYVIEW WELLINGTON HOMES

Project Name
ALCONA
INNISFIL, ONTARIO

RL-6E 2767 sqft

HVAC DESIGNS LTD.
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L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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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.

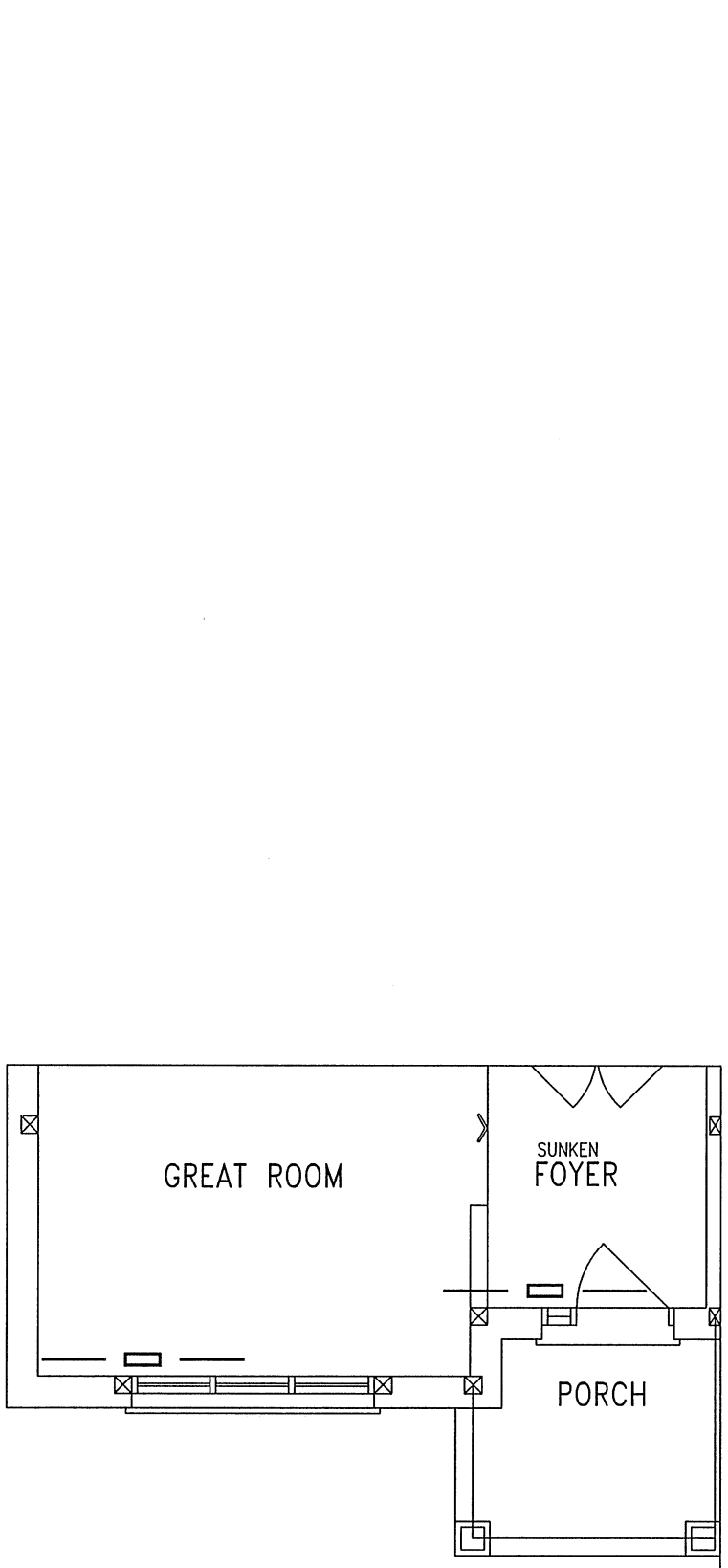
HEAT LOSS 50034 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	ML196UH070XE36B
INPUT	66 MBTU/H
OUTPUT	63.9 MBTU/H
COOLING	2.5 TONS
FAN SPEED	985 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR	5	2	2
2ND FLOOR	7	3	2
1ST FLOOR	7	1	2
BASEMENT	3	1	0

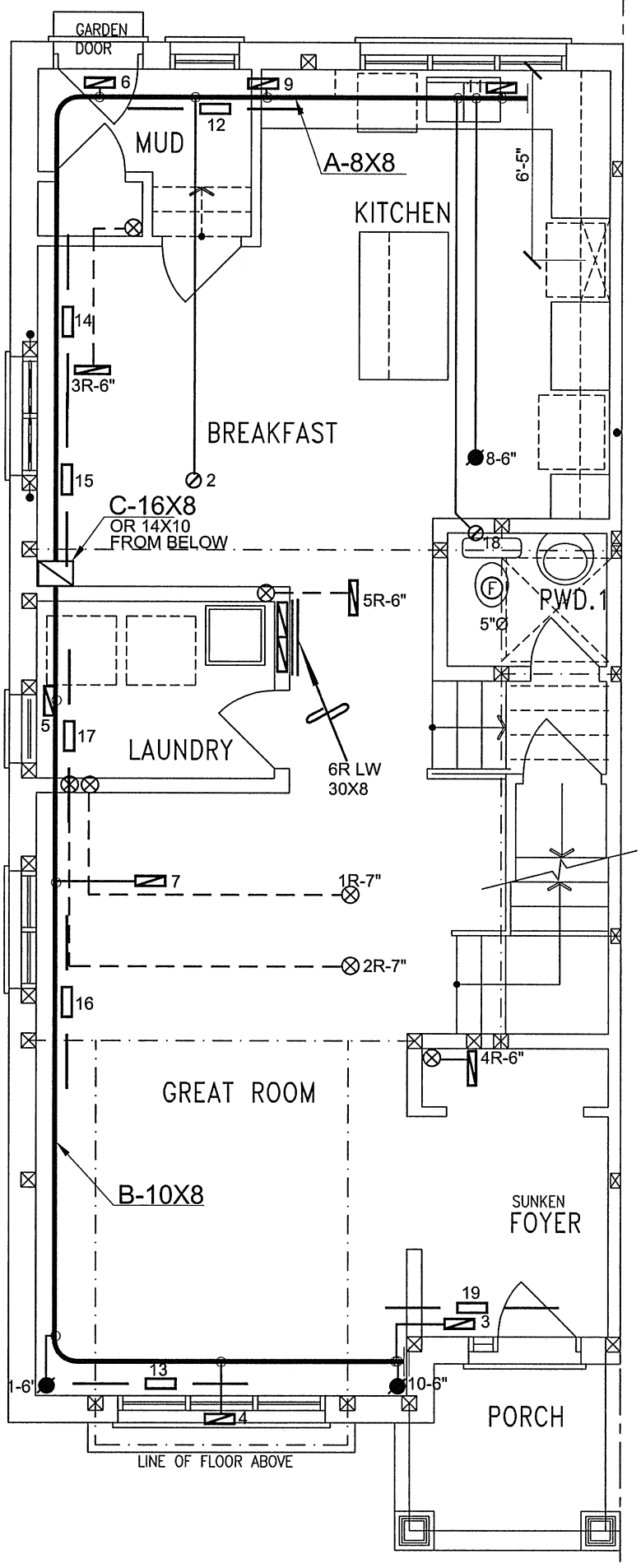
ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

Sheet Title
BASEMENT HEATING LAYOUT

Date JUNE/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 97836



PART. GROUND FLOOR PLAN ELEV. 'B'



GROUND FLOOR 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
PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT	Ø	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.		

REVISIONS

Client
BAYVIEW WELLINGTON HOMES

Project Name
ALCONA
INNISFIL, ONTARIO

RL-6E 2767 sqft

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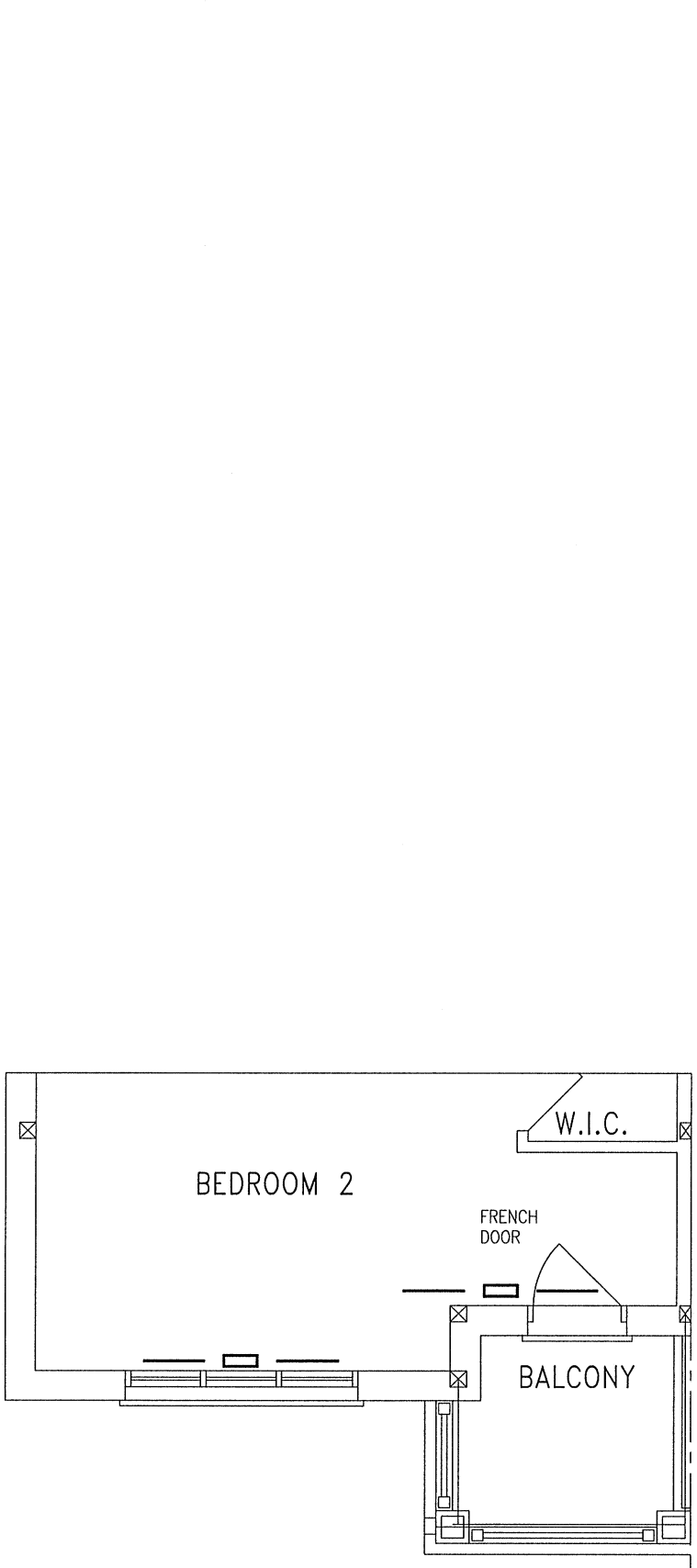
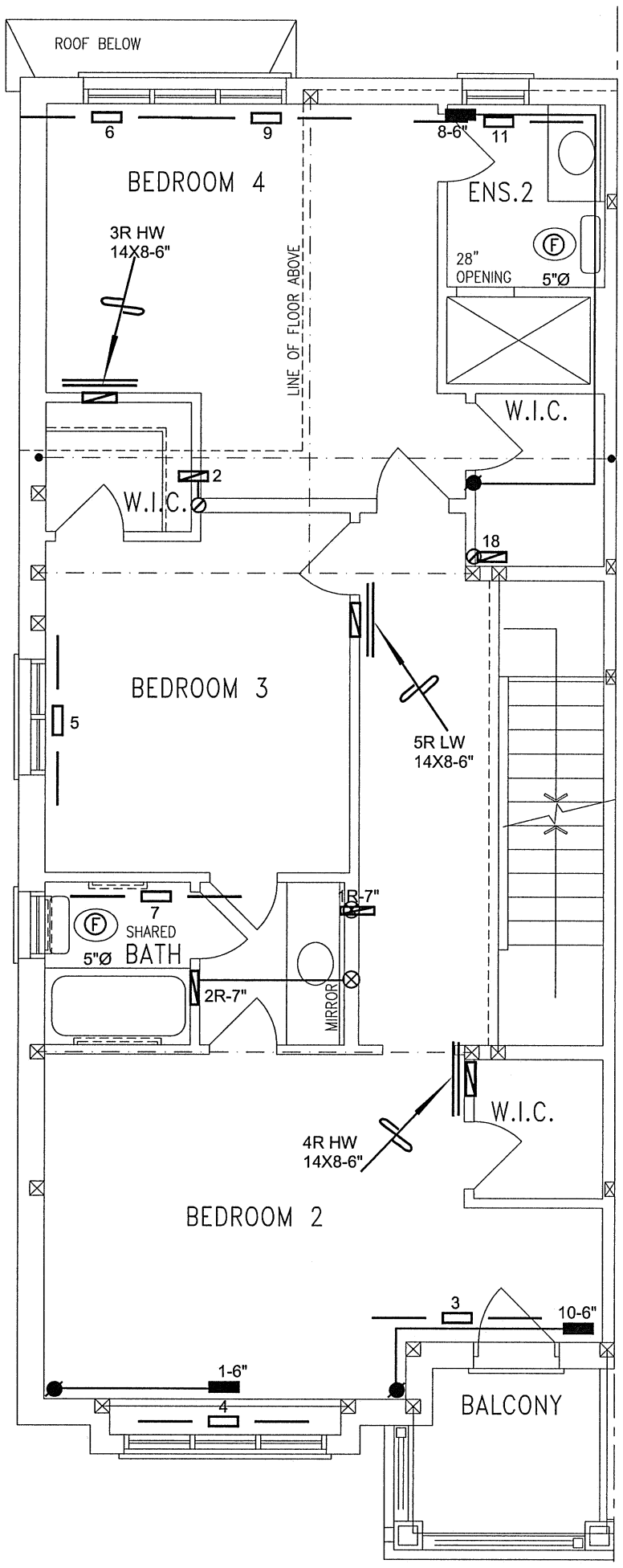
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date JUNE/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 97836



PART. SECOND FLOOR PLAN ELEV. 'B'



SECOND FLOOR PLAN ELEV. 'A'

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

CSA-F280-12
PACKAGE A1

HVAC LEGEND

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

No.	Description	Date
3.		
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REVISIONS

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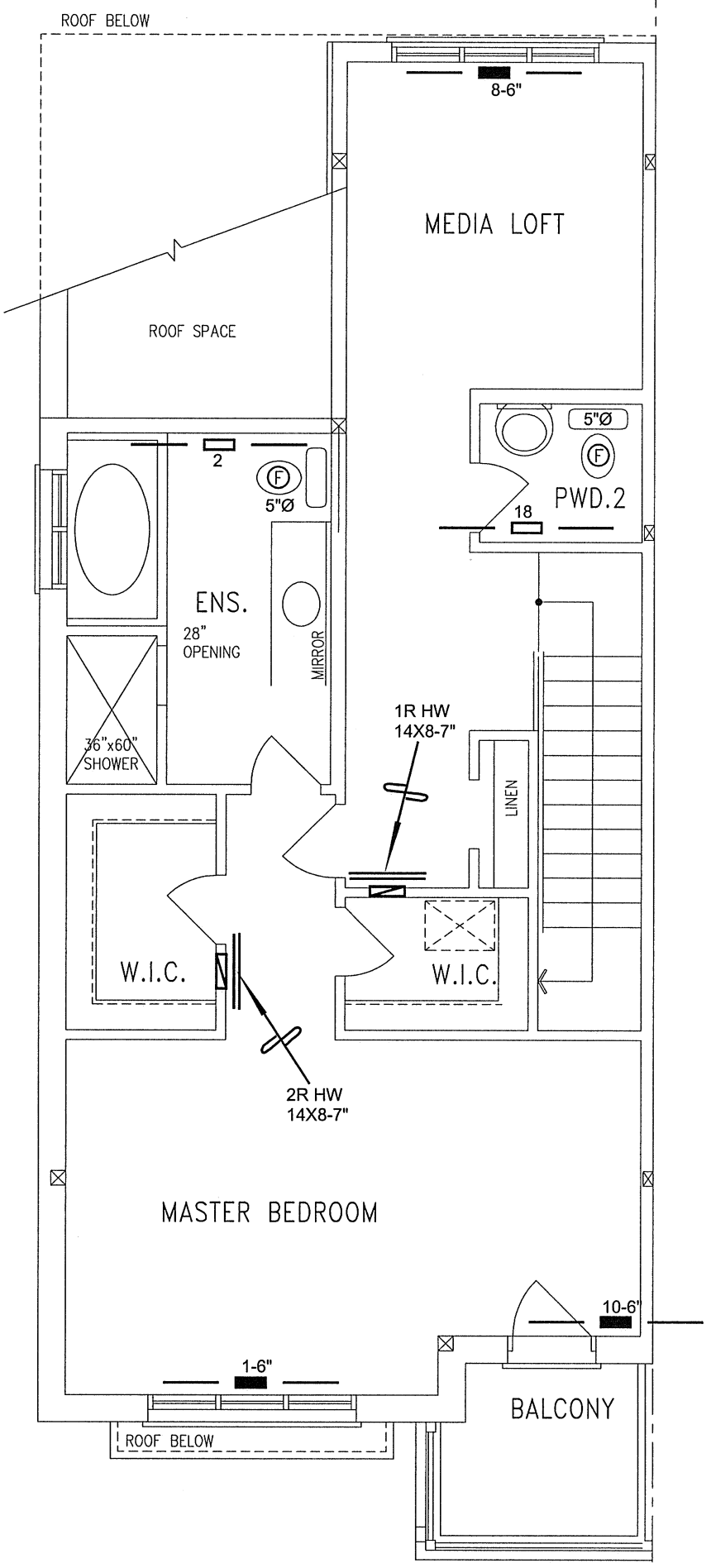
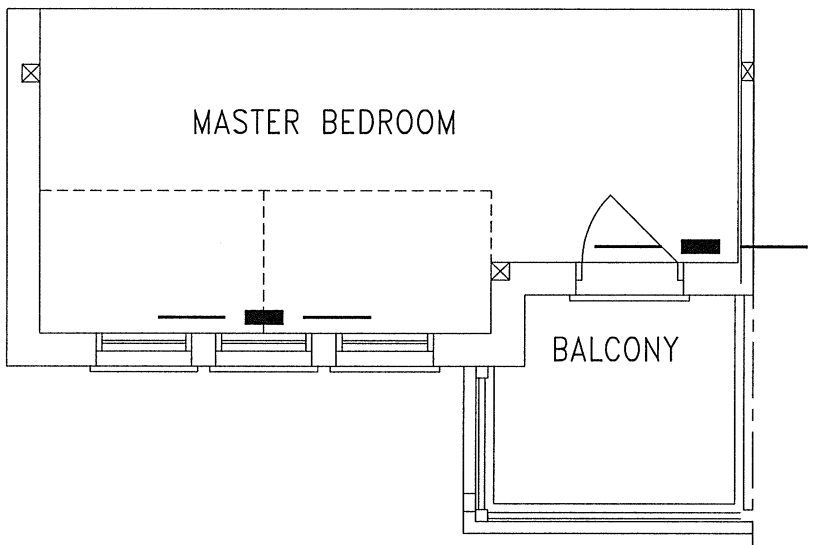
Sheet Title
SECOND FLOOR HEATING LAYOUT

Date JUNE/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 97836





PART. THIRD FLOOR PLAN ELEV. 'B'

THIRD FLOOR PLAN ELEV. '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
PACKAGE A1

HVAC LEGEND

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

No.	Description	Date
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REVISIONS

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Sheet Title
THIRD FLOOR HEATING LAYOUT

Date JUNE/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 97836