HVAC DESIGNS LTD.
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MHP 23029

SITE NAME: ZADORRA ESTATES INC — DATE: Jun-23 — WINTER NATURAL AIR CHANGE RATE 0.342 ✓ — HEAT LOSS ΔT °F. 74 — CSA-F280-12
BUILDER: GREENPARK HOMES — TYPE: ROSE 3 — F 3396 — O# 201[illegible] — SUMMER NATURAL AIR CHANGE RATE 0.094 — HEAT GAIN ΔT °F. 11 — SB-12 PACKAGE A1

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			S-BATH			FLEX				ENS-4				
EXP. WALL			36			24			7			12			15			10			24			37				5				
CLG. HT.			9			9			9			9			9			9			9			9				9				
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	328			218			64			109			137			91			218			337				46				
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0	16	332	248	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	44	914	1806	0	0	0	9	187	369	46	956	1888		0	0	0		
SOUTH	20.8	24.4	0	0	0	14	291	342	0	0	0	0	0	0	0	0	0	16	332	390	0	0	0	16	332	390		0	0	0		
WEST	20.8	41.0	22	457	903	23	478	944	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SKYLT.	36.4	100.7	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		
DOORS	19.6	2.9	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		
NET EXPOSED WALL	4.4	0.6	306	1332	197	181	790	117	64	278	41	93	406	60	93	403	60	75	327	48	209	912	135	275	1197	177		46	198	29		
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		
EXPOSED CLG	1.3	0.6	325	407	181	134	168	75	75	94	42	238	298	133	196	246	109	187	234	104	98	123	55	289	362	161		48	60	27		
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	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				0			
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			0				0			
SUBTOTAL HT LOSS				2196			1727			372			1037			1563			893			1222			2847				258			
SUB TOTAL HT GAIN					1282			1477			83			440			1975			543			559			2617				56		
LEVEL FACTOR / MULTIPLIER			0.20	0.27		0.20	0.27		0.20	0.27		0.20	0.27		0.20	0.27		0.20	0.27		0.20	0.27		0.20	0.27			0.20	0.27			
AIR CHANGE HEAT LOSS				584			459			99			276			415			238			325			757				69			
AIR CHANGE HEAT GAIN					70			80			5			24			108			30			30			142				3		
DUCT LOSS				0			0			0			0			0			0			0			0				0			
DUCT GAIN					0			0			0			0			0			0			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		
HEAT GAIN APPLIANCES/LIGHTS					780			0			0			780			780			780			0			0				0		
TOTAL HT LOSS BTU/H				2779			2186			470			1312			1978			1131			1547			3604				327			
TOTAL HT GAIN x 1.3 BTU/H					3395			2025			114			1930			4034			2071			767			3587				77		

ROOM USE			H-OFF			DIN			KT/BF			FAM			LAUN			PWD			FOY			MUD				WOD			BAS		
EXP. WALL			24			44			41			37			7			9			50			7				41			174		
CLG. HT.			10			10			10			10			9			10			10			10				9			9		
	FACTORS																																
GRS.WALL AREA	LOSS	GAIN	242			444			414			374			64			91			505			71				349			1080		
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	22	457	340	22	457	340	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	3	62	46
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	457	903	0	0	0		0	0	0	0	0	0
SOUTH	20.8	24.4	0	0	0	0	0	0	0	0	0	0	0	0	7	145	171	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	69	1434	2832	30	623	1231	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
SKYLT.	36.4	100.7	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
DOORS	19.6	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	431	64	21	411	61		0	0	0	21	411	61
NET EXPOSED WALL	4.4	0.6	220	960	142	422	1840	273	345	1504	223	344	1498	222	57	247	37	91	396	59	461	2009	298	50	217	32		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		246	864	128	399	1402	208
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	100	125	56	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	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	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			0			0							5837	
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			0				0				
SUBTOTAL HT LOSS				1417			2297			2937			2121			518			396			2896			628				864			7837	
SUB TOTAL HT GAIN					483			613			3055			1453			263			59			1265			93				128			462
LEVEL FACTOR / MULTIPLIER			0.30	0.40		0.30	0.40		0.30	0.40		0.30	0.40		0.20	0.27		0.30	0.40		0.30	0.40		0.30	0.40						0.50	0.96	
AIR CHANGE HEAT LOSS				562			912			1166			842			138			157			1149			249							8395	
AIR CHANGE HEAT GAIN					26			33			166			79			14			3			69			5								32
DUCT LOSS				0			0			0			0			0			0			0			0							0	
DUCT GAIN					0			0			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	0		0			0		0		0
HEAT GAIN APPLIANCES/LIGHTS					780			780			780			780			780			0			0			0				0				780
TOTAL HT LOSS BTU/H				1980			3209			4103			2962			655			553			4046			877				864			16231	
TOTAL HT GAIN x 1.3 BTU/H					1676			1855			5202			3007			1375			80			1734			128				167			1656

TOTAL HEAT GAIN BTU/H: 35114 — TONS: 2.93 — LOSS DUE TO VENTILATION LOAD BTU/H: 1593 — STRUCTURAL HEAT LOSS: 50816 — TOTAL COMBINED HEAT LOSS BTU/H: 52409

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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MHP 23029

SITE NAME: ZADORRA ES
BUILDER: GREENPARK HOMES

TYPE: ROSE 2 DATE: Jun-23 GFA: 2596 LO# 101736

HEATING CFM	1131	COOLING CFM	1131	furnace motor heat	0.6
TOTAL HEAT LOSS	50,816	TOTAL HEAT GAIN	34,878	furnace filter	0.05
AIR FLOW RATE CFM	22.26	AIR FLOW RATE CFM	32.43	a/c coil pressure	0.2
				available pressure for s/a & r/a	0.35

#GOODMAN
GMEC960603BNA 60
FAN SPEED
LOW
MEDLOW
MEDIUM 928
MEDIUM HIGH 1017
HIGH 1131

AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = **57,600**
DESIGN CFM = **1131**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	14	9	4
R/A	0	0	5	2	1

plenum pressure s/a 0.18 r/a pressure 0.17
max s/a dif press. loss 0.02 r/a grille press. Loss 0.02
min adjusted pressure s/a 0.16 adjusted pressure r/a 0.15

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	S-BATH	FLEX	BED-3	MBR	ENS-4	H-OFF	DIN	KT/BF	KT/BF	FAM	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.39	1.09	0.47	1.31	0.99	1.13	1.55	1.80	0.99	1.39	0.33	1.98	3.21	2.05	2.05	1.48	0.66	0.55	4.05	0.88	4.27	4.27	4.27	4.27
CFM PER RUN HEAT	31	24	10	29	22	25	34	40	22	31	7	44	71	46	46	33	15	12	90	20	95	95	95	95
RM GAIN MBH.	1.70	1.01	0.11	1.93	2.02	2.07	0.77	1.79	2.02	1.70	0.08	1.68	1.85	2.60	2.60	1.50	1.37	0.08	1.73	0.13	0.46	0.46	0.46	0.46
CFM PER RUN COOLING	55	33	4	63	65	67	25	58	65	55	2	54	60	84	84	49	45	3	56	4	15	15	15	15
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	0.16	0.16	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	37	53	35	34	41	35	41	50	42	48	35	20	21	37	30	30	34	19	29	20	34	26	18	25
EQUIVALENT LENGTH	140	190	200	180	130	180	150	160	140	170	120	180	120	160	150	120	200	120	140	130	80	90	120	140
TOTAL EFFECTIVE LENGTH	177	243	235	214	171	215	191	210	182	218	155	200	141	197	180	150	234	139	169	150	114	116	138	165
ADJUSTED PRESSURE	0.1	0.07	0.07	0.08	0.1	0.08	0.09	0.08	0.09	0.08	0.11	0.09	0.12	0.08	0.09	0.11	0.07	0.12	0.1	0.11	0.14	0.14	0.12	0.1
ROUND DUCT SIZE	5	4	4	**6**	5	**6**	4	5	5	5	4	5	5	**6**	**6**	4	5	4	**6**	4	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	228	275	115	148	162	127	390	294	162	228	80	323	521	235	235	379	110	138	459	229	484	484	484	484
COOLING VELOCITY (ft/min)	404	379	46	321	477	342	287	426	477	404	23	396	441	428	428	562	330	34	286	46	76	76	76	76
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	C	D	D	B	B	B	A	B	C	D	B	D	C	C	C	B	B	A	B	D	D	D	A

RUN #	25	26	27
ROOM NAME	FLEX	ENS	FAM
RM LOSS MBH.	1.80	1.09	1.48
CFM PER RUN HEAT	40	24	33
RM GAIN MBH.	1.79	1.01	1.50
CFM PER RUN COOLING	58	33	49
ADJUSTED PRESSURE	0.17	0.17	0.17
ACTUAL DUCT LGH.	54	39	40
EQUIVALENT LENGTH	200	170	140
TOTAL EFFECTIVE LENGTH	254	209	180
ADJUSTED PRESSURE	0.07	0.08	0.1
ROUND DUCT SIZE	5	4	4
HEATING VELOCITY (ft/min)	294	275	379
COOLING VELOCITY (ft/min)	426	379	562
OUTLET GRILL SIZE	3X10	3X10	3X10
TRUNK	A	C	C

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	265	0.07	8.8	10	x	8	477	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	459	0.07	10.8	14	x	8	590	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	268	0.07	8.9	12	x	8	402	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	670	0.07	12.5	18	x	8	670	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1131	0.06	15.8	30	x	8	679
TRUNK Y	265	0.06	9.2	10	x	8	477
TRUNK Z	275	0.06	9.3	10	x	8	495
DROP	1131	0.06	15.8	24	x	10	679

RETURN AIR #	1	2	3	4	5	6	7									**BR**
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	115	85	95	85	85	116	360	0	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.	56	48	49	47	46	18	17	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	150	185	190	145	145	135	175	0	0	0	0	0	0	0	0	150
TOTAL EFFECTIVE LH	206	233	239	192	191	153	192	1	1	1	1	1	1	1	1	164
ADJUSTED PRESSURE	0.07	0.06	0.06	0.08	0.08	0.10	0.08	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6.5	6	6	5.6	5.6	5.9	9.6	0	0	0	0	0	0	0	0	7.3
INLET GRILL SIZE	8	8	8	8	8	8	8	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	14	30	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: ROSE 3 LO # 101736
SITE NAME: ZADORRA ESTATES INC

MHP 23029

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	5	@ 10.6 cfm	53.0	cfm
Table 9.32.3.A.		TOTAL	180.2 ✓	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	180.2	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	100.7 ✓	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	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
S-BATH	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-4	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: GREENPARK 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-23

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
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MHP 23029

CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 101736 Model: ROSE 3 Builder: GREENPARK HOMES Date: 2023-06-30

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1388	9	11798
First	1388	10	14018.8
Second	1225	9	11147.5
Third	0	9	0
Fourth	0	9	0
		Total:	36,964.3 ft³
		Total:	1046.7 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.342
SUMMER NATURAL AIR CHANGE RATE	0.094

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

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

0.342 x 290.75 x 41 °C x 1.2 = 4921 W

= **16790 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.094 x 290.75 x 6 °C x 1.2 = 201 W

= **684 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 74 °F x 1.08 x 0.25 = **1593 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 11 °F x 1.08 x 0.25 = **236 Btu/h**

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

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

Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL_{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)
1	0.5	16,790	8,701	0.965
2	0.3		12,693	0.397
3	0.2		12,633	0.266
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

MHP 23029

MODEL: ROSE 3 **BUILDER:** GREEN PARK HOMES
SFQT: 2596 **LO#** 101736 **SITE:** ZADORRA ESTATES INC

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
		WINDOW SHGC	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
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):	36964.3	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.95	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	5.5 ft
LENGTH: 56.0 ft	WIDTH: 31.0 ft	EXPOSED PERIMETER:	174.0 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

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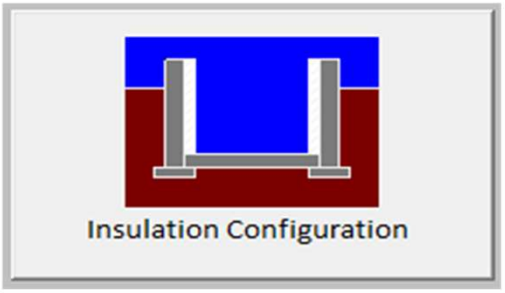
MHP 23029

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Oshawa
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):	**9.4**	
Exposed Perimeter (m):	**0.0**	
Wall Height (m):	**2.6**	
Depth Below Grade (m):	**1.68**	
Window Area (m^2):	**0.8**	
Door Area (m^2):	**2.0**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):	**1710**	

TYPE: ROSE 3
LO# 101736

Michael O'Rourke BCIN #19669

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

MHP 23029

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Oshawa
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):	7.68
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	1046.7
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 1395.3 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):	**0.342**
Cooling Air Leakage Rate (ACH/H):	**0.094**

TYPE: ROSE 3
LO# 101736

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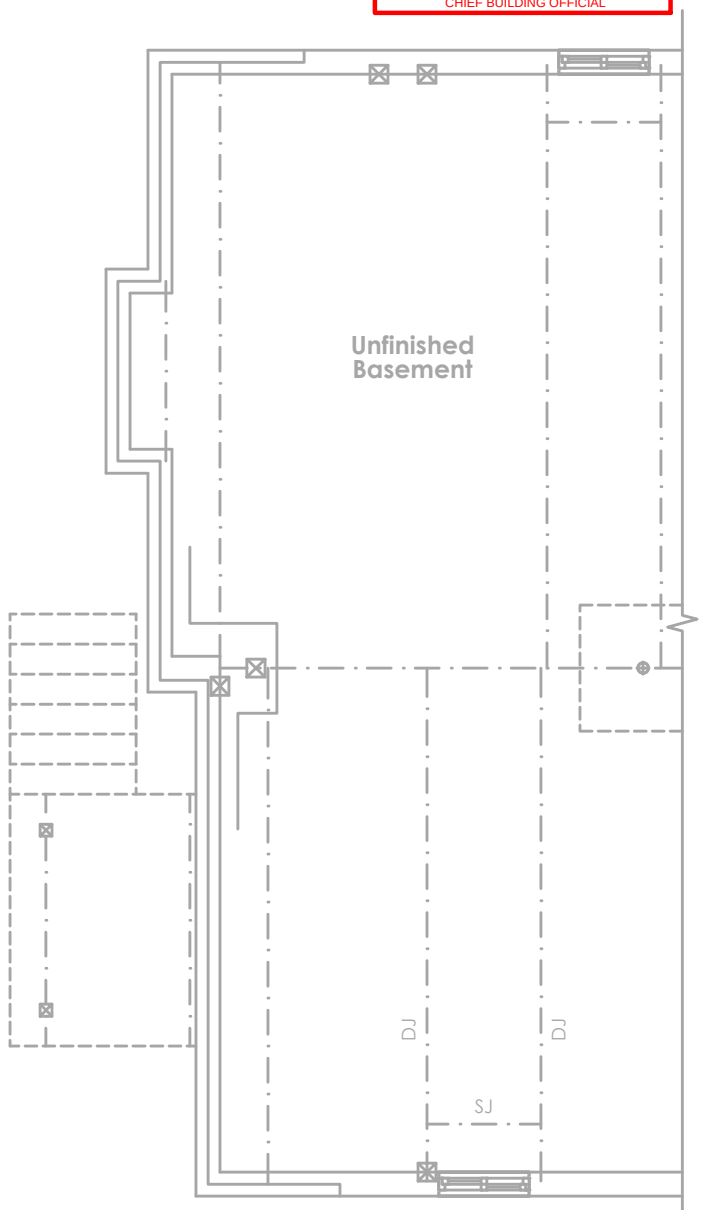
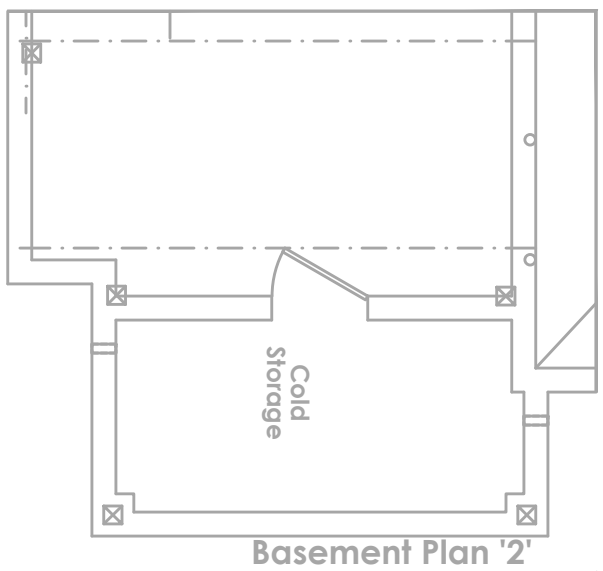
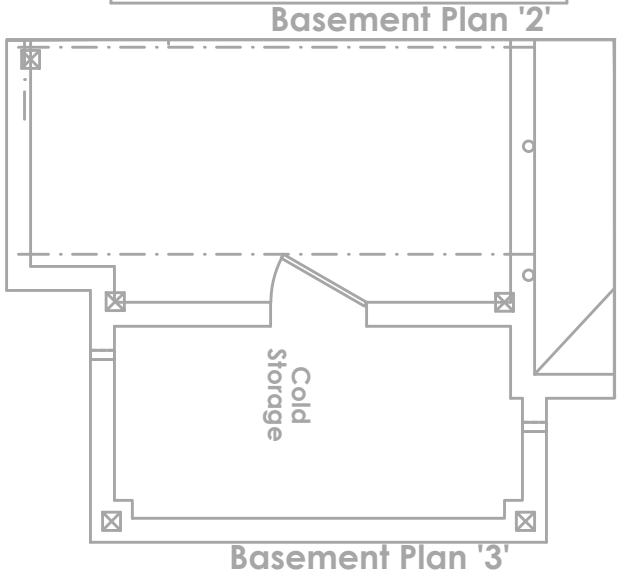


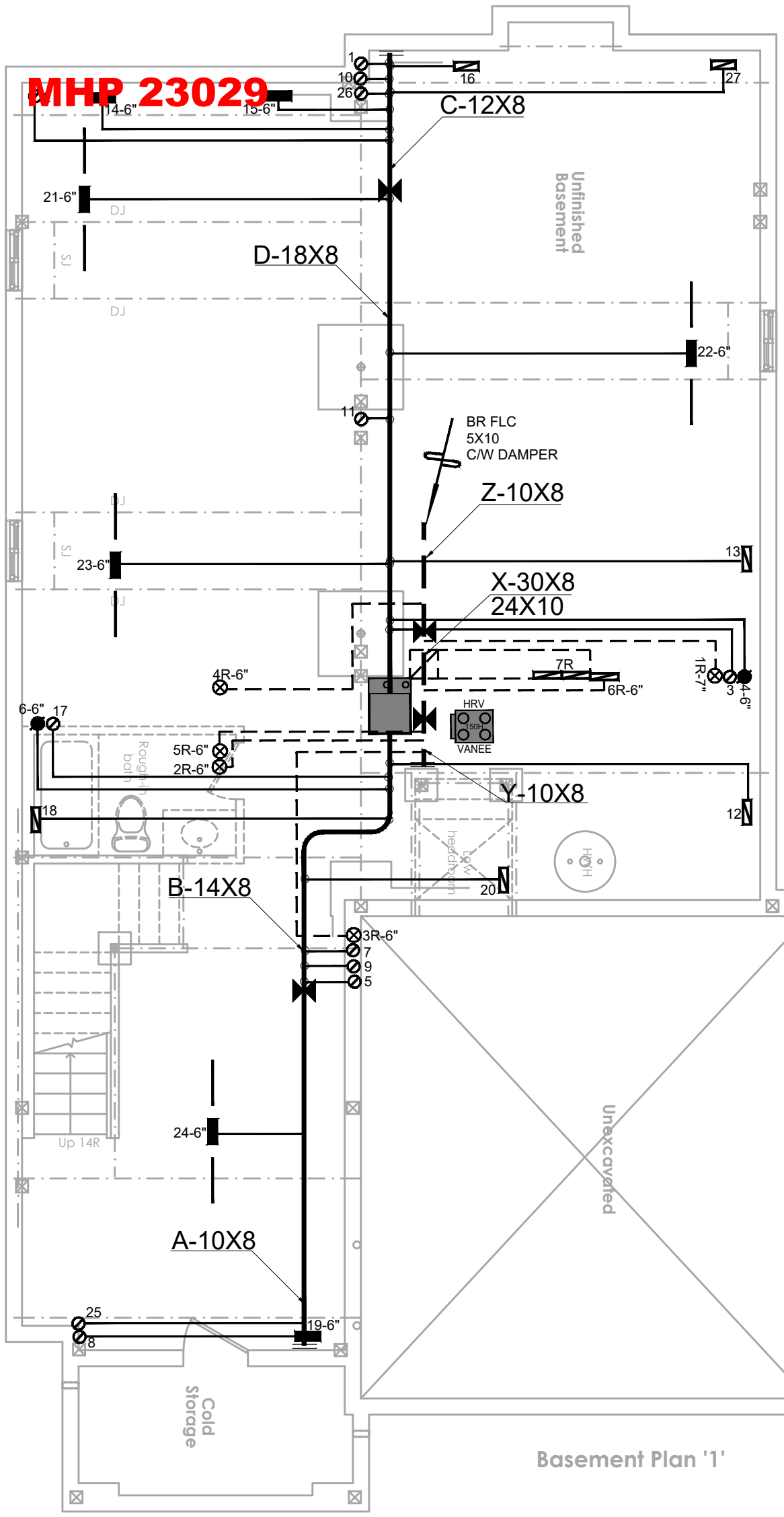
Partial Basement Plan For Deck Condition Elevation '1', '2' and '3'



Basement Plan '2'



Basement Plan '3'



Basement Plan '1'

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

I Michael O'Rourke have reviewed 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.

PACKAGE A1

Client
GREENPARK HOMES

Project Name
ZADORRA
OSHAWA, ONTARIO

ROSE 3 2596 sqft

HVAC DESIGNS LTD.
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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 52409 BTU/H	
UNIT DATA	
MAKE	GOODMAN
MODEL	GMEC960603BNA
INPUT	60.0 MBTU/H
OUTPUT	57.6 MBTU/H
COOLING	3.0 TONS
FAN SPEED	1131 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	14	5	4
1ST FLOOR	9	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 JULY/2023
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 101736

CORPORATION OF THE CITY OF OSHAWA
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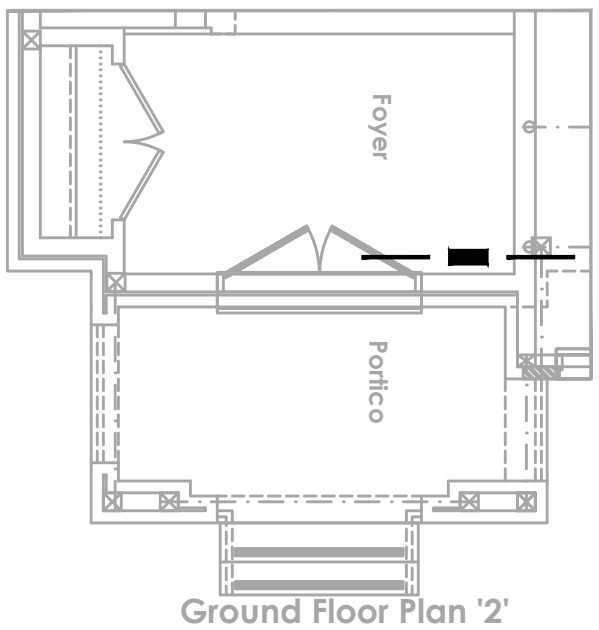
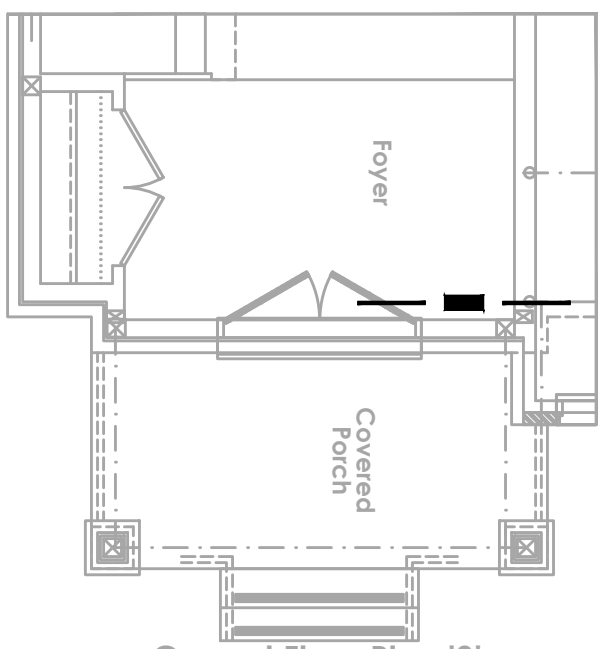
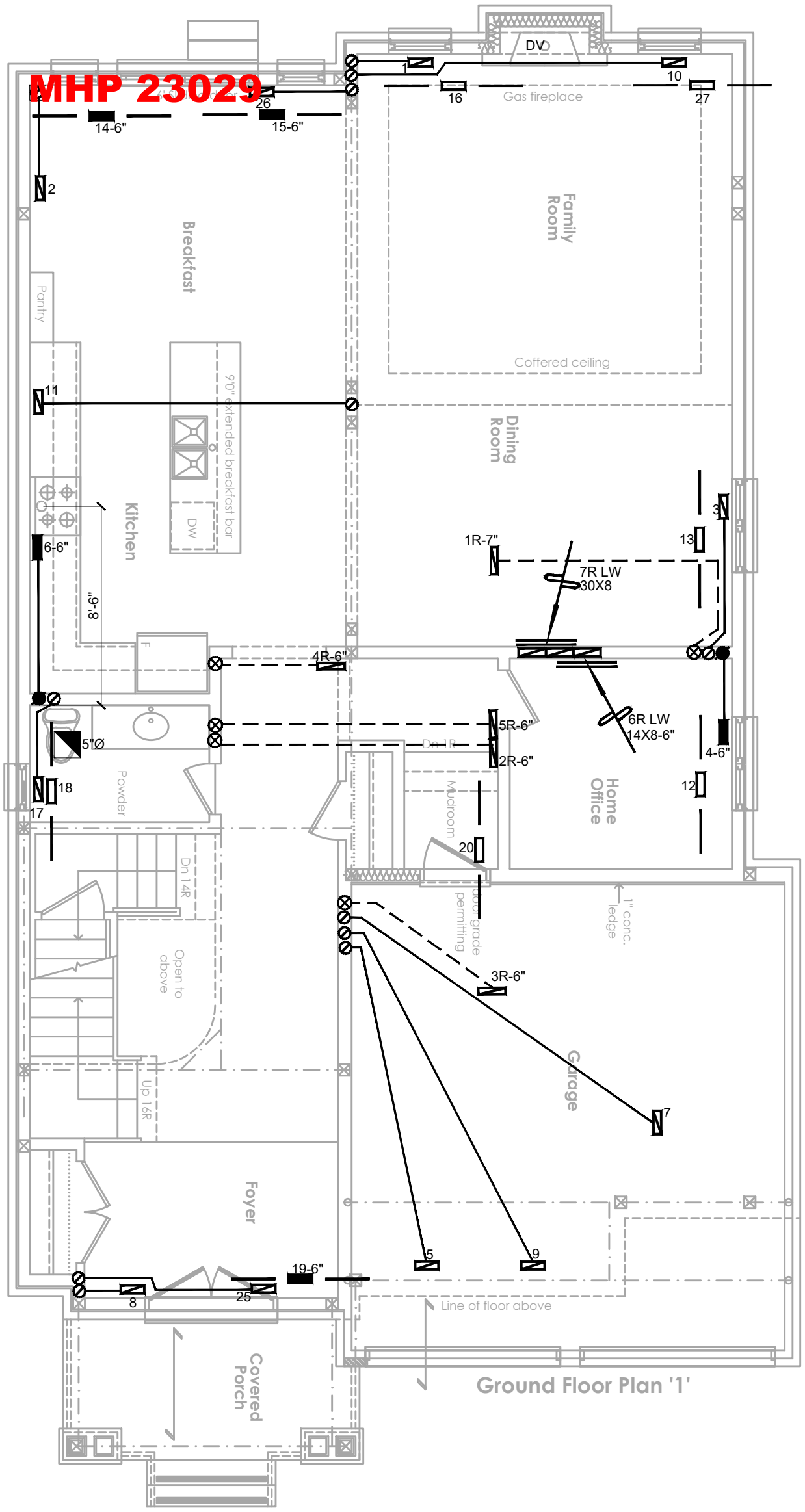


Ground Floor Plan '2'



Ground Floor Plan '3'



Ground Floor Plan '1'

HVAC LEGEND							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
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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.		
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Sheet Title
FIRST FLOOR HEATING LAYOUT

Date JULY/2023
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 101736

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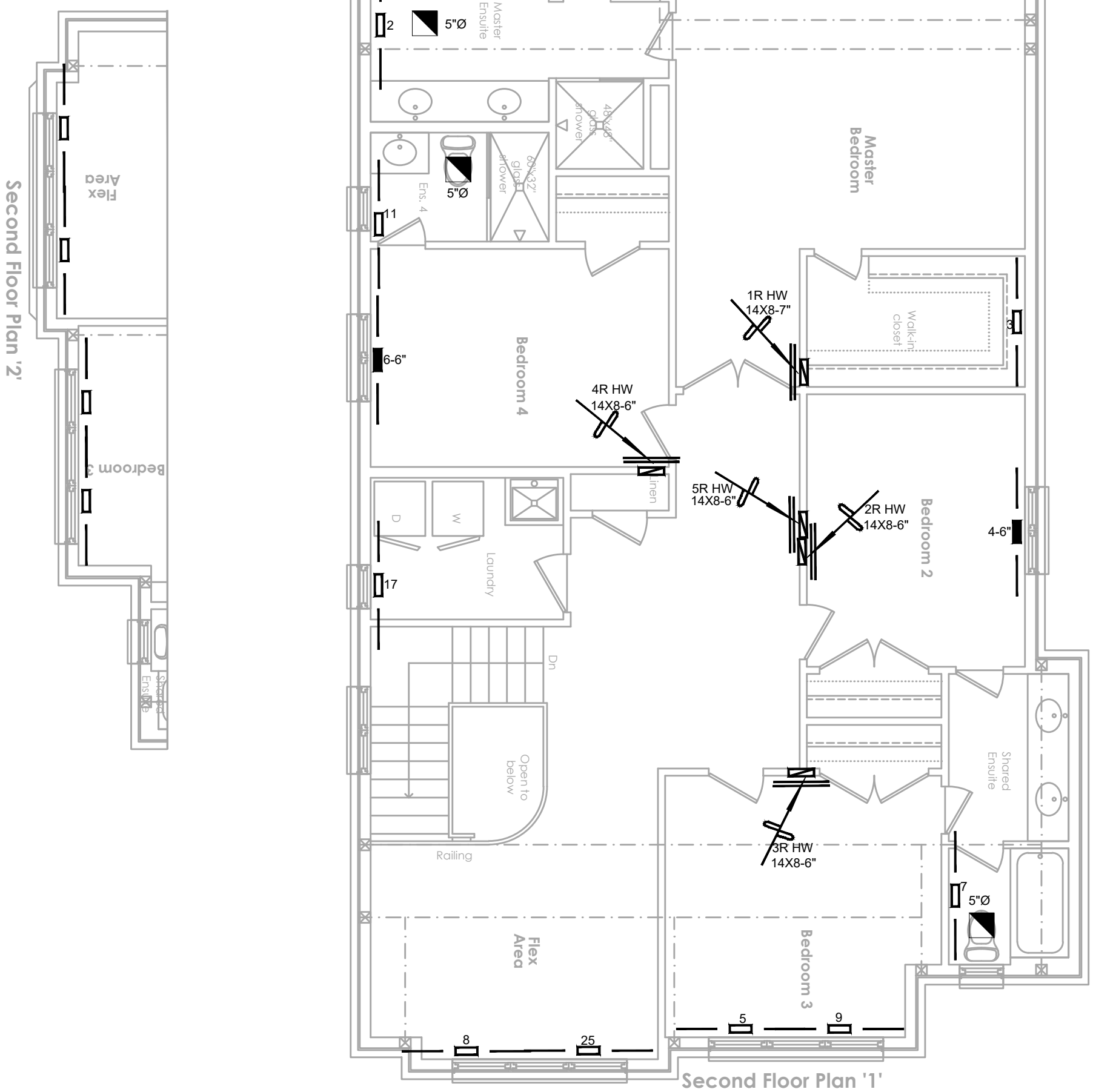

HVAC LEGEND							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
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No.	Description	Date
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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date JULY/2023
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 101736