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

MHP 23026

SITE NAME: ZADORRA ESTATES INC | DATE: May-23 | WINTER NATURAL AIR CHANGE RATE 0.343 ✓ | HEAT LOSS ΔT °F. 74 | CSA-F280-12
BUILDER: GREENPARK HOMES | GFA: 2414 | LO# 101239 | SUMMER NATURAL AIR CHANGE RATE 0.094 | HEAT GAIN ΔT °F. 11 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS						BED-2			BED-3			BED-4			BATH								
EXP. WALL			40			21						26			34			12			16								
CLG. HT.			9			9						9			9			9			9								
	FACTORS																												
GRS.WALL AREA	LOSS	GAIN	376			197			85			244			320			113			150								
GLAZING			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	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	35	727	1437	36	748	1478	0	0	0	0	0							
SOUTH	20.8	24.4	0	0	0	9	187	220	0	0	0	0	0	0	9	187	220	9	187	220	18	374	439						
WEST	20.8	41.0	24	499	985	12	249	493	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						
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						
NET EXPOSED WALL	4.4	0.6	352	1534	227	176	769	114	85	369	55	209	912	135	275	1196	177	104	452	67	132	577	86						
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						
EXPOSED CLG	1.3	0.6	359	450	200	120	150	67	65	81	36	229	287	128	195	244	109	135	169	75	146	183	81						
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	13	35	16	0	0	0	0	0	0						
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	38	95	14	203	505	75	0	0	0	0	0	0	0	0	0						
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0						
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0						
SUBTOTAL HT LOSS				2482			1355			545			2432			2411			808			1134						
SUB TOTAL HT GAIN					1413			893			105			1774			1999			362			606						
LEVEL FACTOR / MULTIPLIER			0.20	0.26		0.20	0.26		0.20	0.26		0.20	0.26		0.20	0.26		0.20	0.26		0.20	0.26							
AIR CHANGE HEAT LOSS				646			353			142			633			627			210			295						
AIR CHANGE HEAT GAIN					86			54			6			108			121			22			37						
DUCT LOSS				0			0			69			306			0			0			0						
DUCT GAIN					0			0			11			289			0			0			0						
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0						
HEAT GAIN APPLIANCES/LIGHTS					768			0			0			768			768			768			0						
TOTAL HT LOSS BTU/H				3128			1708			755			3371			3038			1019			1429						
TOTAL HT GAIN x 1.3 BTU/H					3570			1231			159			4132			4066			1809			836						

ROOM USE			LV/DN			FAM			KT/BF				LAUN			PWD			FOY			MUD					WOD			BAS		
EXP. WALL			38			49			22				6			7			31			20					33			158		
CLG. HT.			10			10			10				9			10			10			10					9			9		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	376			485			218				56			69			307			198					300			1063		
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		0	0	0	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	0	0	0	20	416	821	0	0	0			0	0	0	0	0	0
SOUTH	20.8	24.4	27	561	659	9	187	220	9	187	220		9	187	220	9	187	220	0	0	0	0	0	0			0	0	0	3	62	73
WEST	20.8	41.0	0	0	0	66	1371	2709	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0			6	125	246	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	10	196	29	0	0	0		0	0	0	0	0	0	28	548	81	21	411	61			0	0	0	21	411	61
NET EXPOSED WALL	4.4	0.6	349	1521	226	400	1743	258	209	910	135		47	207	31	60	263	39	259	1128	167	177	771	114			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			192	675	100	375	1317	195
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0		48	60	27	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
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							5113 ✓	
SLAB ON GRADE HEAT LOSS				0			0			0				0			0			0			0					0			
SUBTOTAL HT LOSS				2082			3497			1097				454			450			2092			1182					799			6904	
SUB TOTAL HT GAIN					884			3216			354				277			259			1069			175					346			329
LEVEL FACTOR / MULTIPLIER			0.30	0.44		0.30	0.44		0.30	0.44			0.20	0.26		0.30	0.44		0.30	0.44		0.30	0.44							0.50	0.98	
AIR CHANGE HEAT LOSS				908			1526			478				118			196			912			516							7561	
AIR CHANGE HEAT GAIN					54			195			21				17			16			65			11								41
DUCT LOSS				0			0			0				0			0			0			0							0		
DUCT GAIN					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
HEAT GAIN APPLIANCES/LIGHTS					768			768			768				0			0			0			0					0			768
TOTAL HT LOSS BTU/H				2991			5023			1575				572			646			3004			1698					799			14465	
TOTAL HT GAIN x 1.3 BTU/H					2217			5432			1487				382			356			1475			242					450			1479

TOTAL HEAT GAIN BTU/H: 29558 TONS: 2.46 LOSS DUE TO VENTILATION LOAD BTU/H: 1593 STRUCTURAL HEAT LOSS: 45220 TOTAL COMBINED HEAT LOSS BTU/H: 46813

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 23026

SITE NAME: ZADORRA ESTATES INC
BUILDER: GREENPARK HOMES
TYPE: RIVER 9
DATE: May-23
GFA: 2414
LO# 101239

HEATING CFM 928
TOTAL HEAT LOSS 45,220
AIR FLOW RATE CFM 20.52
COOLING CFM 928
TOTAL HEAT GAIN 29,322
AIR FLOW RATE CFM 31.65

e pressure 0.6
rnace filter 0.05
il pressure 0.2
available pressure for s/a & r/a 0.35

#GOODMAN
GMEC960603BNA 60
AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = **57,600**

FAN SPEED
LOW
MEDLOW
MEDIUM 928
MEDIUM HIGH 1017
HIGH 1131

DESIGN CFM = **928**
CFM @ .6 " E.S.P.

TEMPERATURE RISE 57 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	12	8	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	BATH	BED-2	BED-3	MBR	BATH	LV/DN	FAM	KT/BF	KT/BF	FAM	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.56	1.71	0.76	1.69	1.52	1.02	0.71	1.69	1.52	1.56	0.71	2.99	2.51	0.79	0.79	2.51	0.57	0.65	3.00	1.70	3.82	3.82	3.82	3.82
CFM PER RUN HEAT	32	35	15	35	31	21	15	35	31	32	15	61	52	16	16	52	12	13	62	35	78	78	78	78
RM GAIN MBH.	1.78	1.23	0.16	2.07	2.03	1.81	0.42	2.07	2.03	1.78	0.42	2.22	2.72	0.74	0.74	2.72	0.38	0.36	1.47	0.24	0.48	0.48	0.48	0.48
CFM PER RUN COOLING	56	39	5	65	64	57	13	65	64	56	13	70	86	24	24	86	12	11	47	8	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	0.16	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	42	56	26	54	58	35	44	58	60	37	37	28	39	27	22	27	55	45	45	31	34	21	30	42
EQUIVALENT LENGTH	200	170	160	150	130	130	160	160	160	170	150	120	130	120	120	80	130	150	100	120	140	90	110	90
TOTAL EFFECTIVE LENGTH	242	226	186	204	188	165	204	218	220	207	187	148	169	147	142	107	185	195	145	151	174	111	140	132
ADJUSTED PRESSURE	0.07	0.08	0.09	0.08	0.09	0.1	0.08	0.08	0.08	0.08	0.09	0.12	0.1	0.12	0.12	0.15	0.09	0.09	0.12	0.11	0.1	0.15	0.12	0.13
ROUND DUCT SIZE	5	5	4	5	5	**6**	4	5	5	5	4	5	**6**	4	4	**6**	4	4	5	4	5	5	5	5
HEATING VELOCITY (ft/min)	235	257	172	257	228	107	172	257	228	235	172	448	265	184	184	265	138	149	455	402	573	573	573	573
COOLING VELOCITY (ft/min)	411	286	57	477	470	291	149	477	470	411	149	514	438	275	275	438	138	126	345	92	110	110	110	110
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	D	C	D	A	A	C	D	A	A	D	D	B	C	C	C	D	B	A	A	B	C	D	B	B

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	207	0.08	7.8	8	x	8	466	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	471	0.08	10.6	14	x	8	606	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	218	0.08	7.9	8	x	8	491	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	928	0.07	14.1	24	x	8	696	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	928	0.05	15.3	28	x	8	597
TRUNK Y	325	0.05	10.4	12	x	8	488
TRUNK Z	0	0.05	0	0	x	8	0
DROP	928	0.05	15.3	24	x	10	557

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	110	100	90	90	115	147	120	0	0	0	0	0	0	0	0	156
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	40	43	66	57	79	21	49	1	1	1	1	1	1	1	1	20
EQUIVALENT LENGTH	135	135	230	220	225	175	185	0	0	0	0	0	0	0	0	180
TOTAL EFFECTIVE LH	175	178	296	277	304	196	234	1	1	1	1	1	1	1	1	200
ADJUSTED PRESSURE	0.08	0.08	0.05	0.05	0.05	0.08	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.07
ROUND DUCT SIZE	6	5.9	6.4	6.4	7	6.8	6.8	0	0	0	0	0	0	0	0	7
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	14	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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MHP 23026

TYPE: RIVER 9 LO # 101239
SITE NAME: ZADORRA ESTATES INC

RESIDENTIAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES

- 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	4	@ 10.6 cfm	42.4	cfm
Other Rooms	4	@ 10.6 cfm	42.4	cfm
Table 9.32.3.A.		TOTAL	159.0 ✓	cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED 9.32.3.4.(1)

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

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	159		cfm
Less Principal Ventil. Capacity	79.5		cfm
Required Supplemental Capacity	79.5	✓	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
BATH	BY INSTALLING CONTRACTOR	50	✓	3.5
		✓		
PWD	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE V150H

150 cfm high 35 cfm low

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

LOCATION OF INSTALLATION

Lot: Concession

Township Plan:

Address

Roll # Building Permit #

BUILDER: 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: May-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.

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MHP 23026

CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 101239 Model: RIVER 9 Builder: GREENPARK HOMES Date: 2023-05-19

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1095	9	9964.5
First	1095	10	10840.5
Second	1319	9	12398.6
Third	0	9	0
Fourth	0	9	0
		Total:	33,203.6 ft³
		Total:	940.2 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.343
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

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

0.343 x 261.17 x 41 °C x 1.2 = 4432 W

= **15122 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 261.17 x 6 °C x 1.2 = 181 W

= **616 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	15,122	7,703	0.982
2	0.3		10,400	0.436
3	0.2		11,620	0.260
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

Michael O'Rourke
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MHP 23026

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: RIVER 9 **BUILDER:** GREENPARK HOMES
SFQT: 2414 **LO#** 1(**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):	33203.6	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.75	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.1 ft
LENGTH: 56.0 ft	WIDTH: 23.0 ft	EXPOSED PERIMETER:	158.0 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

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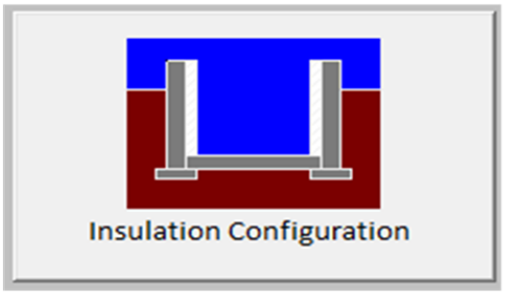
MHP 23026

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**	
Floor Width (m):	**7.0**	
Exposed Perimeter (m):	**0.0**	
Wall Height (m):	**2.8**	
Depth Below Grade (m):	**1.86**	
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):	**1498**	

TYPE: RIVER 9
LO# 101239

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HVAC Designs Ltd.
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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):	7.71

Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	940.2

Air Leakage/Ventilation		
Air Tightness Type:	Present (1961-) (3.57 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1253.3 cm^2
	3.57	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust
	37.5	37.5

Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0

Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.343**
Cooling Air Leakage Rate (ACH/H):	**0.094**

TYPE: RIVER 9
LO# 101239

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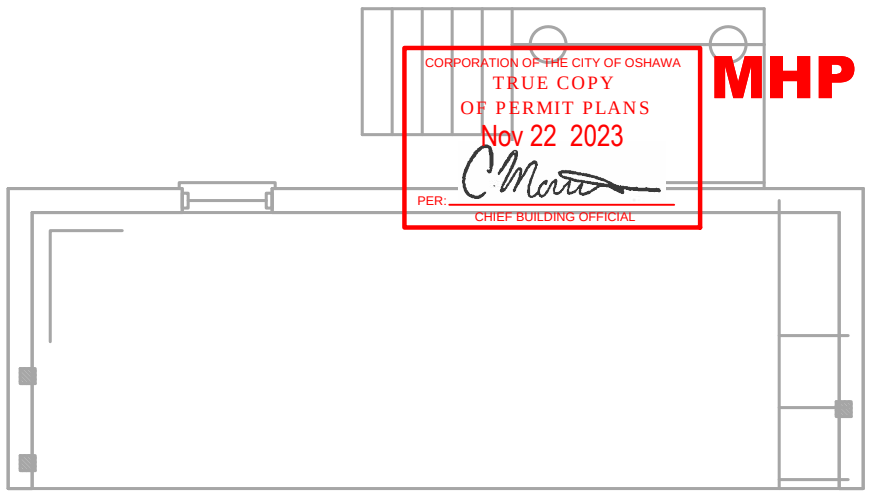
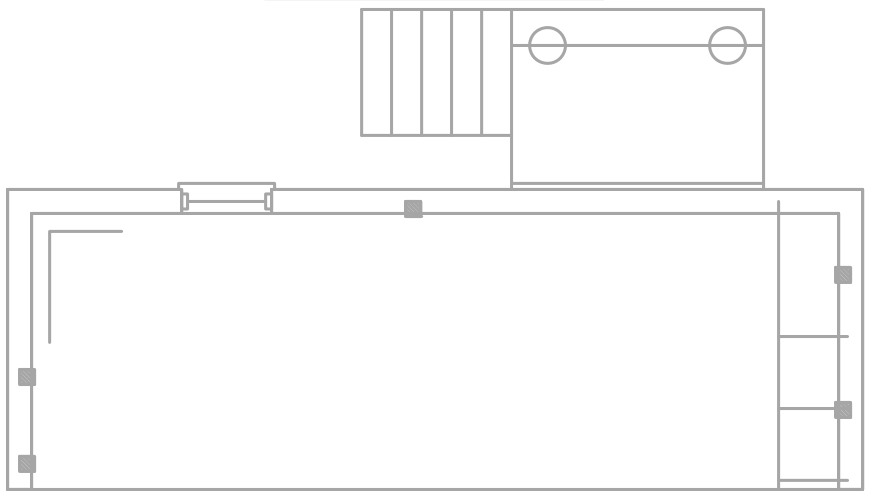
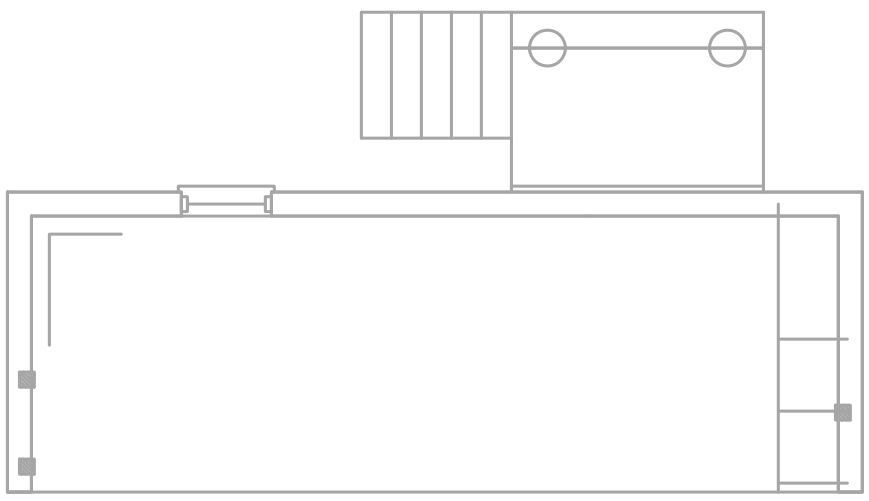


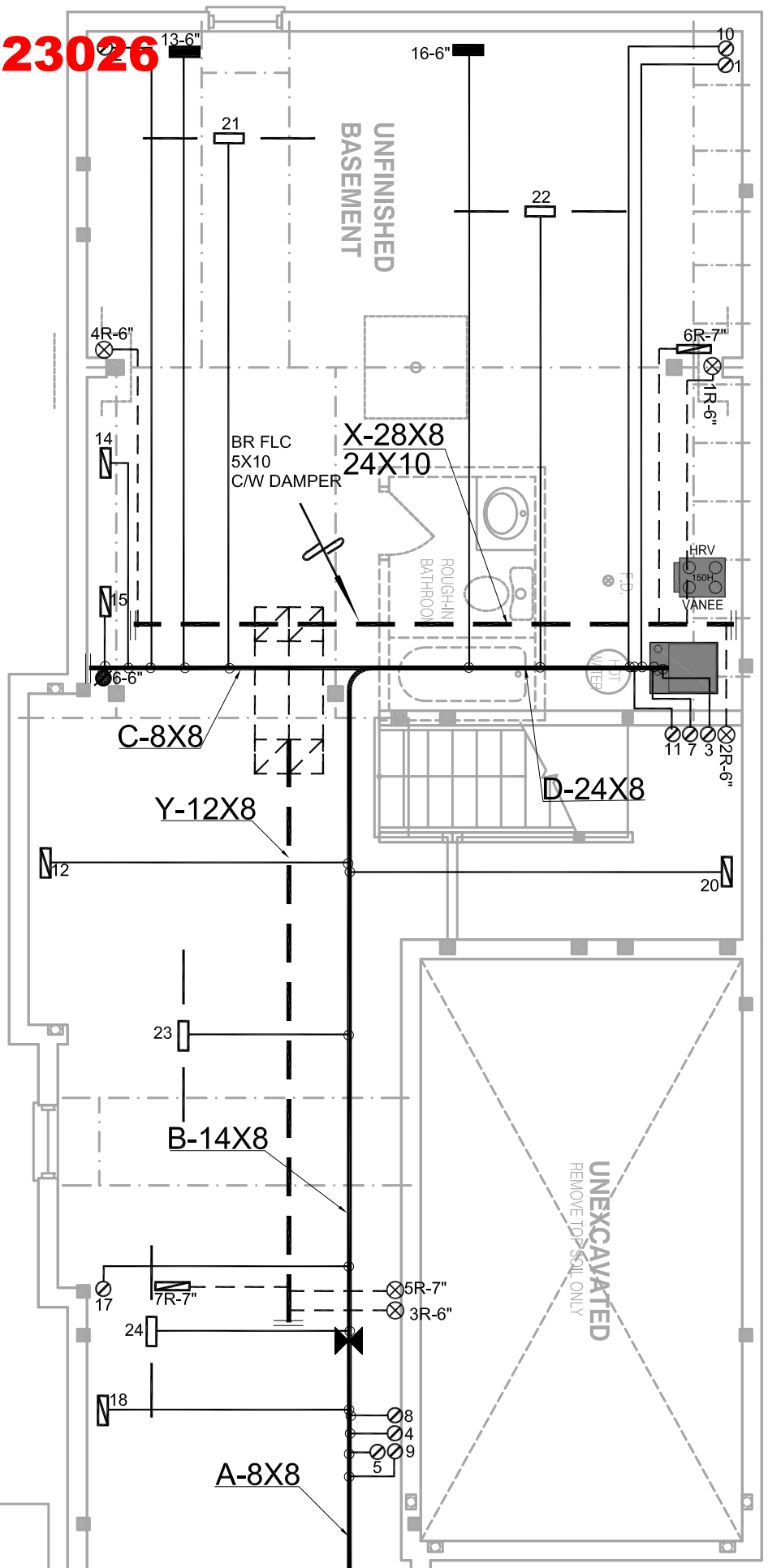
PARTIAL BASEMENT LAYOUT
FOR DECK CONDITION EL-1



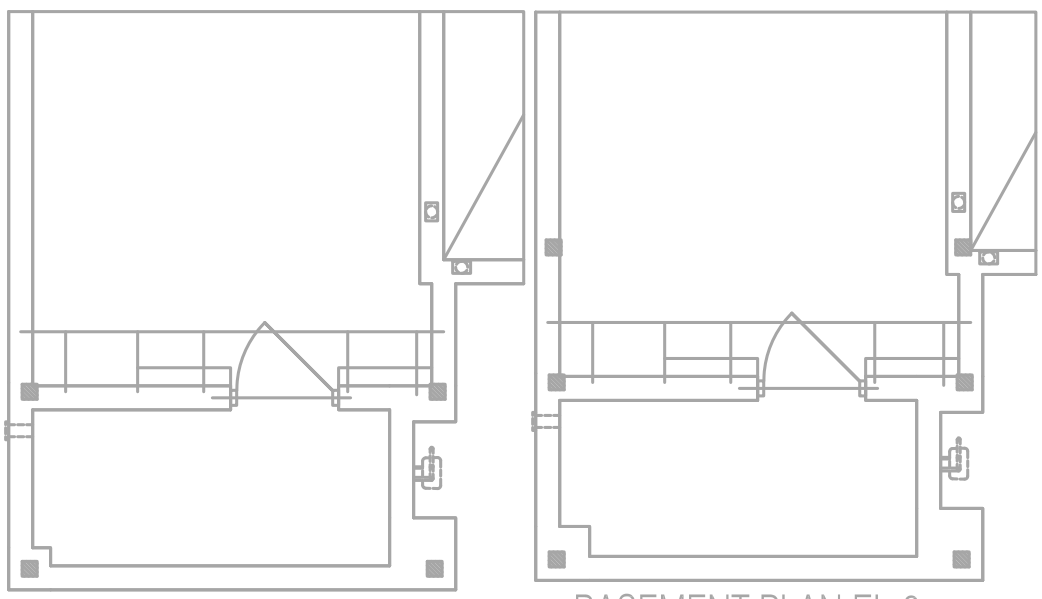
PARTIAL BASEMENT LAYOUT
FOR DECK CONDITION EL-3



PARTIAL BASEMENT LAYOUT
FOR DECK CONDITION EL-2



BASEMENT PLAN EL-1



BASEMENT PLAN EL-2

BASEMENT PLAN EL-3

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.

Mlchael O'Rourke BCIN # 19669
HVAC Designs Ltd.

PACKAGE A1

Client
GREENPARK HOMES

Project Name
ZADORRA ESTATES INC
OSHAWA, ONTARIO

RIVER 9 2414 sqft

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

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

HEAT LOSS 46813 BTU/H

UNIT DATA

MAKE	GOODMAN	
MODEL	GMEC960603BNA	
INPUT	60	MBTU/H
OUTPUT	57.6	MBTU/H
COOLING	2.5	TONS
FAN SPEED	928	cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	12	5	2
1ST FLOOR	8	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 MAY/2023

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 101239

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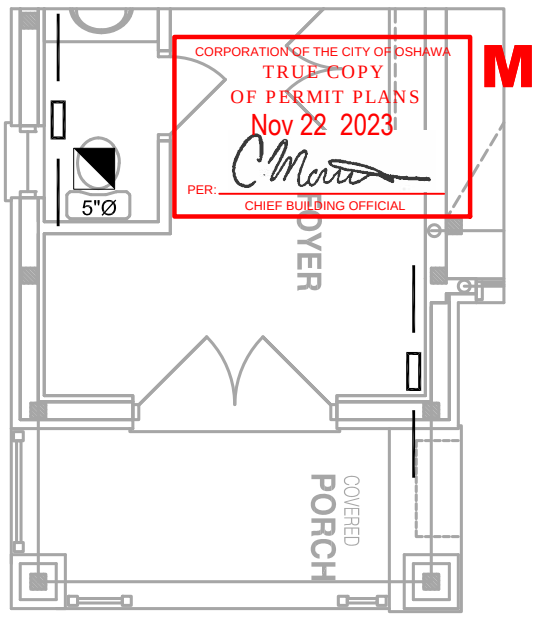
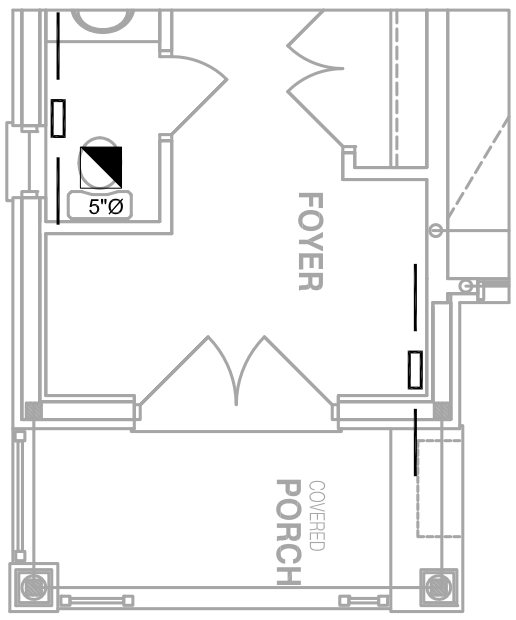
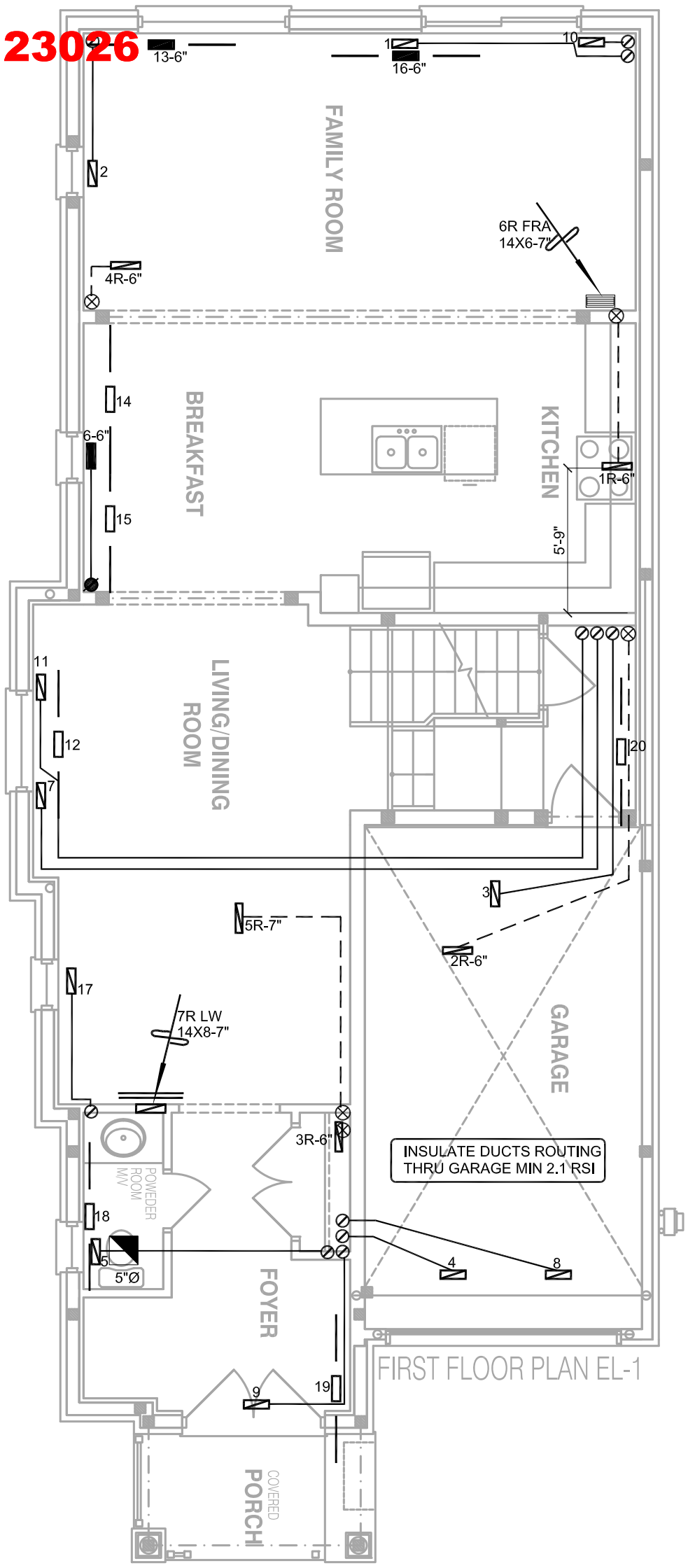


FIRST FLOOR PLAN EL-3



FIRST FLOOR PLAN EL-2



FIRST FLOOR PLAN EL-1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
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Sheet Title
FIRST FLOOR HEATING LAYOUT

Date MAY/2023
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 101239

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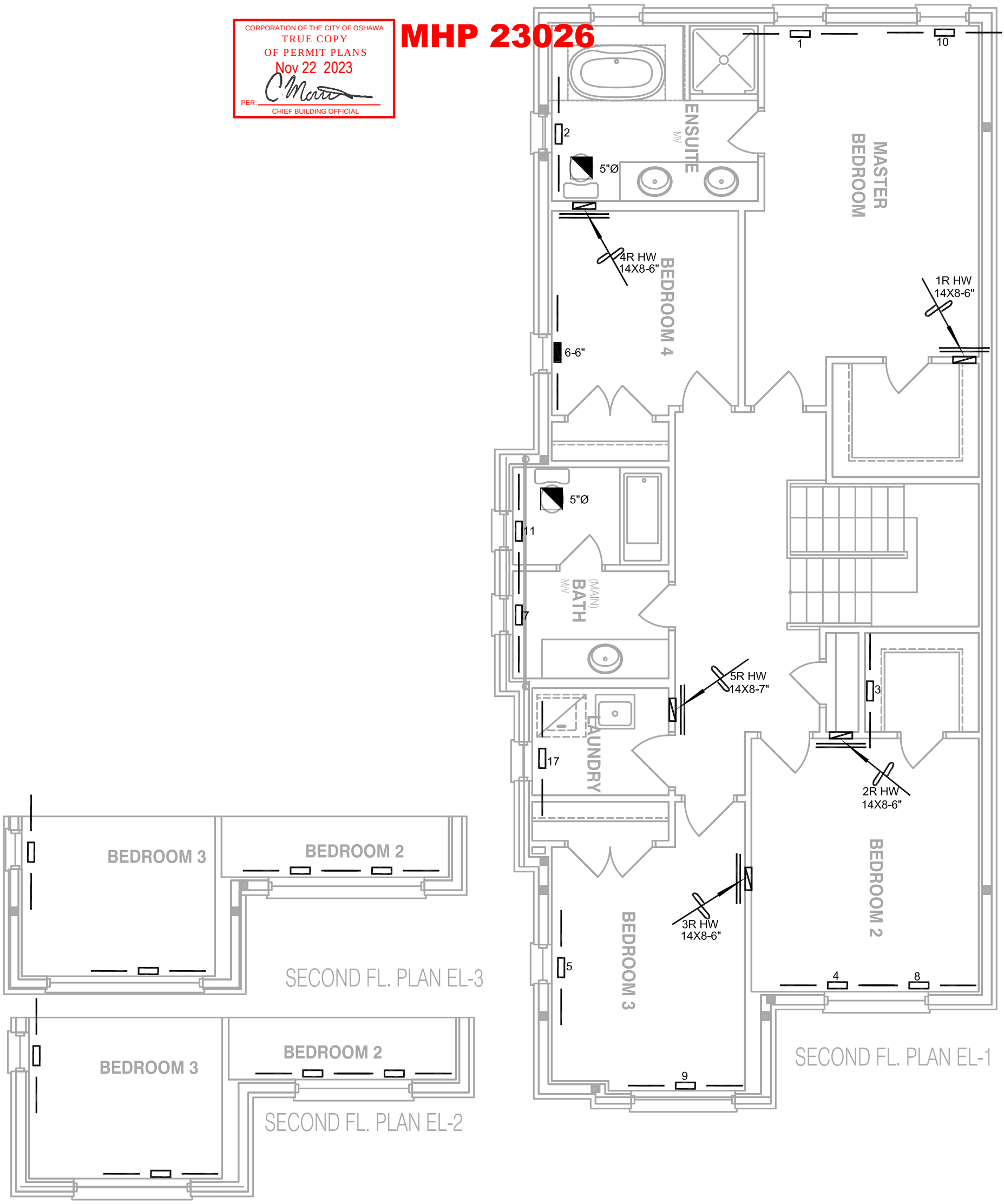

HVAC LEGEND							
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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date MAY/2023
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 101239