

CORPORATE
HVAACDESIGNS LTD.
TRUE COPY
OF PERMIT PLANS
Nov 23 2023
PER: 
CHIEF BUILDING OFFICIAL

MHP 23022

SITE NAME: ZADORRA ESTATES INC

BUILDER: GREENPARK HOMES

TYPE: RIVER 2

WINTER NATURAL AIR CHANGE RATE 0.340

HEAT LOSS ΔT °F. 74

CSA-F280-12

SUMMER NATURAL AIR CHANGE RATE 0.094 ✓

HEAT GAIN ΔT °F. 11

SB-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	LOSS	GAIN	MBR	ENS	BED-2	BED-3	BED-4	BATH
						37	24	28	41	18	11
						9	9	9	9	9	9
GRS.WALL AREA	GLAZING					337	218	255	373	164	100
						LOSS	GAIN	LOSS	GAIN	LOSS	GAIN
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	0	0	24	499	985	35
SOUTH	20.8	24.4	0	0	0	9	187	0	0	0	0
WEST	20.8	41.0	22	457	903	9	187	0	0	0	0
SKYLT.	36.4	100.7	0	0	0	0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.4	0.6	315	1371	203	200	873	231	1006	149	330
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	303	380	169	147	184	191	239	106	250
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	14	38	17	14
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	205	510	76	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			2208			1431		2292		2682	1296
SUB TOTAL HT GAIN				1275		800			1333		2001
LEVEL FACTOR / MULTIPLIER	0.20	0.27				0.20	0.27	0.20	0.27		0.20
AIR CHANGE HEAT LOSS			587			381		610		714	345
AIR CHANGE HEAT GAIN				82		51			86		129
DUCT LOSS			0			0		290		0	
DUCT GAIN				0		0			237		0
HEAT GAIN PEOPLE	240		2		480	0		1		240	1
HEAT GAIN APPLIANCES/LIGHTS					715	0			715		715
TOTAL HT LOSS BTU/H			2795			1812		3191		3396	1641
TOTAL HT GAIN x 1.3 BTU/H				3318		1107		3395		4010	2156

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	LOSS	GAIN	LV/DN	KT/BF	LAUN	PWD	FOY	WOD	BAS
						36	51	19	11	41	34	160
						10	10	10	10	10	8	8
GRS.WALL AREA	GLAZING					356	505	188	109	406	286	966
						LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	0	0	0	0	24	499	985
SOUTH	20.8	24.4	40	831	976	0	0	0	7	145	171	0
WEST	20.8	41.0	0	0	0	56	1163	0	0	0	0	0
SKYLT.	36.4	100.7	0	0	0	0	0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	10	196	21	411	61	23	450
NET EXPOSED WALL	4.4	0.6	316	1379	204	439	1912	167	728	108	102	444
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	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
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS			0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS			2210			3272		1139		589	2513	
SUB TOTAL HT GAIN				1180		2611			169	237		1284
LEVEL FACTOR / MULTIPLIER	0.30	0.43				0.30	0.43	0.30	0.43		0.30	0.43
AIR CHANGE HEAT LOSS			950			1407		490		254	1081	
AIR CHANGE HEAT GAIN				76		168			11	15		82
DUCT LOSS			0			0		0		0		0
DUCT GAIN				0		0			0	0		0
HEAT GAIN PEOPLE	240		0		0	0		0		0	0	0
HEAT GAIN APPLIANCES/LIGHTS					715	0			0	0		715
TOTAL HT LOSS BTU/H			3160			4679		1629		843	3593	
TOTAL HT GAIN x 1.3 BTU/H				1633		4542		234		327	1776	

TOTAL HEAT GAIN BTU/H:

25021

TONS: 2.09

LOSS DUE TO VENTILATION LOAD BTU/H: 1593

STRUCTURAL HEAT LOSS: 42411

TOTAL COMBINED HEAT LOSS BTU/H: 44004



CORPORATION OF THE CITY OF OSHAWA

TRUE COPY

OF HVAC PLANS

NOV 23 2023

PER: 

CHIEF BUILDING OFFICIAL

OSHAWA 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

SITE NAME: ZADORRA ESTATES INC

BUILDER: GREENPARK HOMES

TYPE: MHP 23022

DATE: May-23

GFA: 2315 LO# 101173

HEATING CFM 928 COOLING CFM 928

TOTAL HEAT LOSS 42,411 TOTAL HEAT GAIN 24,785

AIR FLOW RATE CFM 21.88 AIR FLOW RATE CFM 37.44

furnace pressure 0.16

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

#GOODMAN 60 AFUE = 96 %

GMEC960603BNA INPUT (BTU/H) = 60,000

FAN SPEED LOW OUTPUT (BTU/H) = 57,600

MEDLOW DESIGN CFM = 928

MEDIUM 928 CFM @ .6" E.S.P.

MEDIUM HIGH 1017

HIGH 1131 TEMPERATURE RISE 57 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	10	6	4
R/A	0	0	5	2	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	9	10	11	13	14	15	17	18	19	21	22	23	24	
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	BATH	BED-2	BED-3	MBR	BATH	LV/DN	KT/BF	KT/BF	LAUN	PWD	FOY	BAS	BAS	BAS	BAS	
RM LOSS MBH.	1.40	1.81	1.60	1.70	1.64	0.40	1.60	1.70	1.40	0.40	3.16	2.34	2.34	1.63	0.84	3.59	3.72	3.72	3.72	3.72	
CFM PER RUN HEAT	31	40	35	37	36	9	35	37	31	9	69	51	51	36	18	79	81	81	81	81	
RM GAIN MBH.	1.66	1.11	1.70	2.01	2.16	0.09	1.70	2.01	1.66	0.09	1.63	2.27	2.27	0.23	0.33	1.78	0.52	0.52	0.52	0.52	
CFM PER RUN COOLING	62	41	64	75	81	3	64	75	62	3	61	85	85	9	12	66	20	20	20	20	
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16	
ACTUAL DUCT LGH.	47	55	64	57	36	17	68	62	40	11	22	41	34	10	38	38	32	24	22	32	
EQUIVALENT LENGTH	210	170	160	160	130	200	160	190	200	110	110	120	140	150	140	110	130	80	140	150	
TOTAL EFFECTIVE LENGTH	257	225	224	217	166	217	228	252	240	121	132	161	174	160	178	148	162	104	162	182	
ADJUSTED PRESSURE	0.07	0.08	0.08	0.08	0.1	0.08	0.08	0.07	0.07	0.14	0.13	0.1	0.09	0.11	0.1	0.12	0.1	0.16	0.1	0.09	
ROUND DUCT SIZE	5	5	5	6	5	4	5	6	5	4	5	6	6	4	4	5	5	5	5	6	
HEATING VELOCITY (ft/min)	228	294	257	189	264	103	257	189	228	103	507	260	260	413	207	580	595	595	595	413	
COOLING VELOCITY (ft/min)	455	301	470	382	595	34	470	382	455	34	448	433	433	103	138	485	147	147	147	102	
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	
TRUNK	C	B	A	A	B	C	A	A	C	C		B	B	A	C	A	A	B	C	A	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														RETURN 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	403	0.07	10.3	12	x	8	605	TRUNK G	0	0.00	0	0	x	8	0												
TRUNK B	259	0.08	8.5	10	x	8	466	TRUNK H	0	0.00	0	0	x	8	0												
TRUNK C	859	0.07	13.7	22	x	8	703	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 #	1	2	3	4	5	6	7										BR
AIR VOLUME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	162
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	0.15
ACTUAL DUCT LGH.	37	47	53	67	33	48	19	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	135	225	145	230	175	225	180	0	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	172	272	198	297	208	273	199	1	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.09	0.05	0.07	0.05	0.07	0.05	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	6	7	6	6.4	6	7	6.6	0	0	0	0	0	0	0	0	0	6.7
INLET GRILL SIZE	8	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	X
INLET GRILL SIZE	14	14	14	14	14	14	14	0	0	0	0	0	0	0	0	0	14

RETURN AIR TRUNK SIZE									
	TRUNK	STATIC	ROUND	RECT					VELOCITY
	CFM	PRESS.	DUCT	DUCT					(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	431	0.05	11.5	16	x	8			485
TRUNK Z	0	0.05	0	0	x	8			0
DROP	928	0.05	15.3	24	x	10			557

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

MHP 23022

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	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>3</u> @ 10.6 cfm	<u>31.8</u> cfm
Kitchen & Bathrooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Other Rooms	<u>2</u> @ 10.6 cfm	<u>21.2</u> cfm
Table 9.32.3.A.	TOTAL	<u>137.8</u> 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	<u>137.8</u>	cfm
Less Principal Ventil. Capacity	<u>79.5</u>	cfm
Required Supplemental Capacity	<u>58.3</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE V150H	Location: BSMT
<u>79.5</u> 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		
<u>150</u> cfm high	<u>35</u> cfm low	
<u>75</u> % Sensible Efficiency	☒ HVI Approved	
@ 32 deg F (0 deg C)		

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:	
HRAI #	001820
Date:	May-23

MHP 23022

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																	
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																	
LO#: 101173		Model: RIVER 2		Builder: GREENPARK HOMES			Date: 2023-05-09																																																										
Volume Calculation					Air Change & Delta T Data																																																												
House Volume <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr> <td>Bsmt</td> <td>1064</td> <td>8</td> <td>8937.6</td> </tr> <tr> <td>First</td> <td>1064</td> <td>10</td> <td>10533.6</td> </tr> <tr> <td>Second</td> <td>1251</td> <td>9</td> <td>11384.1</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>30,855.3 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>873.7 m³</td> </tr> </tbody> </table>					Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1064	8	8937.6	First	1064	10	10533.6	Second	1251	9	11384.1	Third	0	9	0	Fourth	0	9	0	Total:			30,855.3 ft³	Total:			873.7 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 20%;">0.340</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.094</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="5">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DTDh</td> <td>22</td> <td>-19</td> <td>41</td> <td>74</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>30</td> <td>6</td> <td>11</td> </tr> </table>					WINTER NATURAL AIR CHANGE RATE	0.340	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
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																														
Bsmt	1064	8	8937.6																																																														
First	1064	10	10533.6																																																														
Second	1251	9	11384.1																																																														
Third	0	9	0																																																														
Fourth	0	9	0																																																														
Total:			30,855.3 ft³																																																														
Total:			873.7 m³																																																														
WINTER NATURAL AIR CHANGE RATE	0.340																																																																
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					6.2.6 Sensible Gain due to Air Leakage																																																												
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.340 x 242.70 x 41 °C x 1.2 = 4085 W = 13939 Btu/h					$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.094 x 242.70 x 6 °C x 1.2 = 167 W = 568 Btu/h																																																												
5.2.3.2 Heat Loss due to Mechanical Ventilation					6.2.7 Sensible heat Gain due to 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					$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 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)																																																																	
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HLairve Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{clevel})</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.5</td> <td rowspan="5">13,939</td> <td>7,907</td> <td>0.881</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>9,722</td> <td>0.430</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>10,481</td> <td>0.266</td> </tr> <tr> <td>4</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> <tr> <td>5</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> </tbody> </table> *HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0										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	13,939	7,907	0.881	2	0.3	9,722	0.430	3	0.2	10,481	0.266	4	0	0	0.000	5	0	0	0.000																														
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	13,939	7,907	0.881																																																													
2	0.3		9,722	0.430																																																													
3	0.2		10,481	0.266																																																													
4	0		0	0.000																																																													
5	0		0	0.000																																																													
					Michael O'Rourke BCIN# 19669 																																																												

HEAT LOSS AND GAIN SUMMARY SHEET

MHP 23022

MODEL: RIVER 2 **LO#** 101173 **BUILDER:** GREENPARK HOMES
SFQT: 2315 **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 (ft³):	30855.3	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	5.4 ft
LENGTH: 56.0 ft	WIDTH: 24.0 ft	EXPOSED PERIMETER:	160.0 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	-

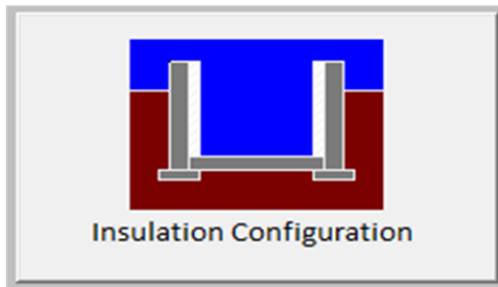
INDIVIDUAL BCIN: 19669
 MICHAEL O'ROURKE

Michael O'Rourke

MHP 23022

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):	7.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.6	
Depth Below Grade (m):	1.65	
Window Area (m ²):	1.5	
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):		1517✓

TYPE: RIVER 2
 LO# 101173



DESIGNS LTD.

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

MHP 23022

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):	7.62			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	873.7			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1164.7 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):	0.340			
Cooling Air Leakage Rate (ACH/H):	0.094			

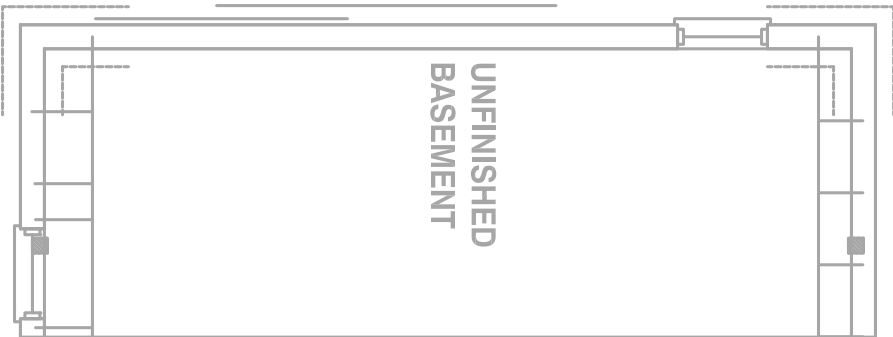
TYPE: RIVER 2
LO# 101173

Michael O'Rourke BCIN# 19669

MHP 23022



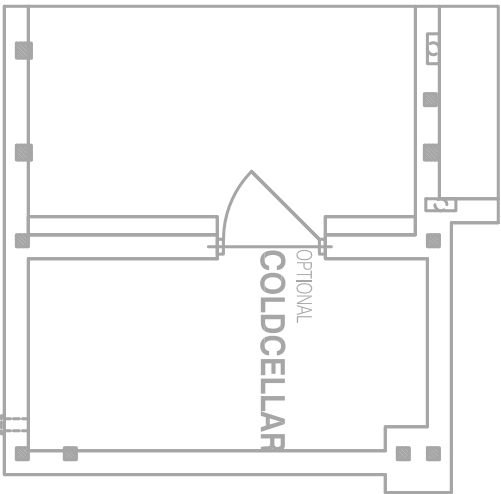
PARTIAL BASEMENT LAYOUT
FOR DECK CONDITION EL-3



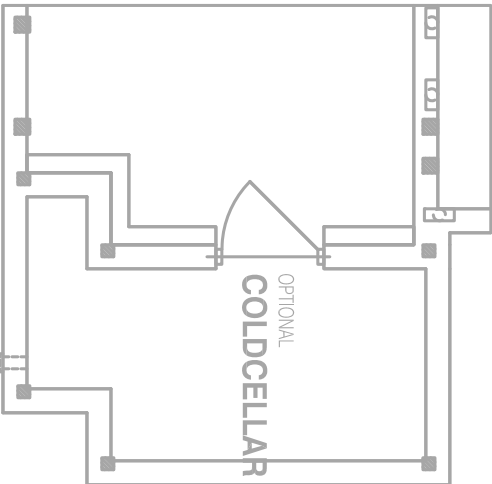
PARTIAL BASEMENT LAYOUT
FOR DECK CONDITION EL-2



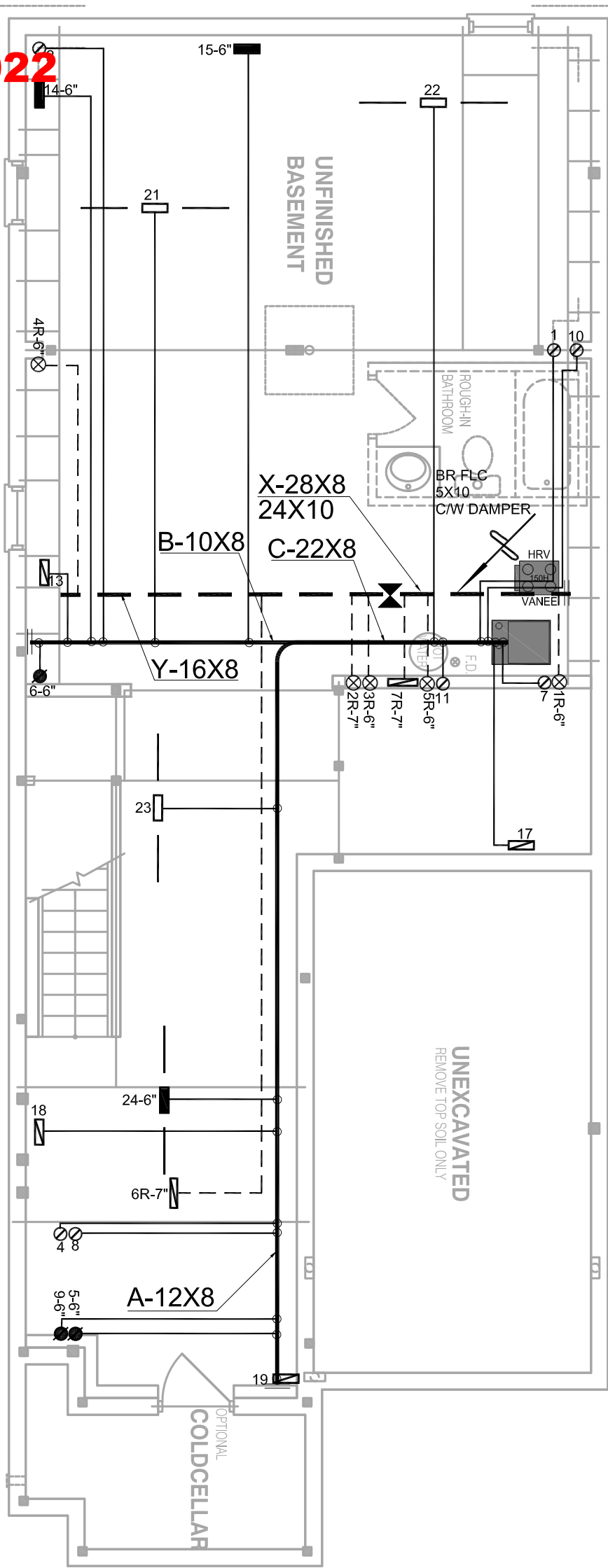
PARTIAL BASEMENT LAYOUT
FOR DECK CONDITION EL-1



BASEMENT FLOOR PLAN-3



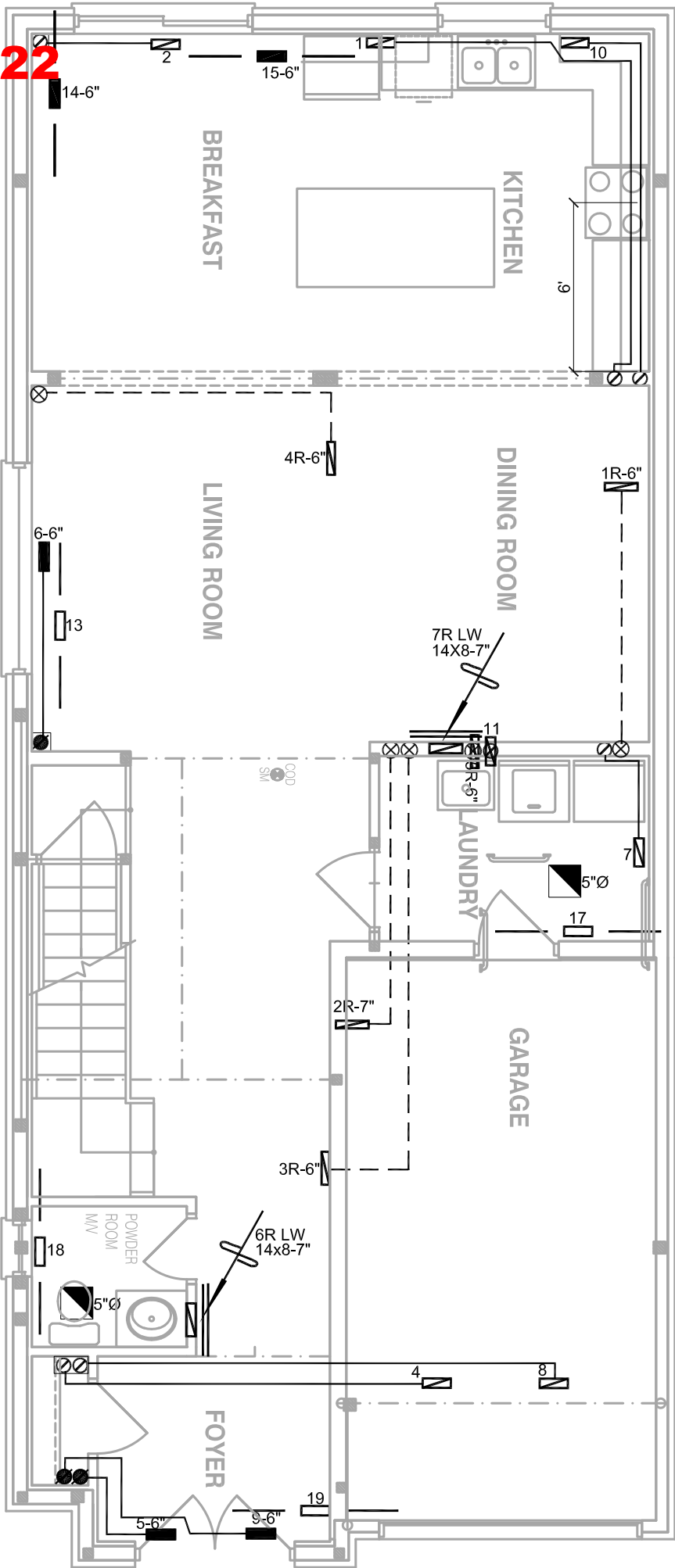
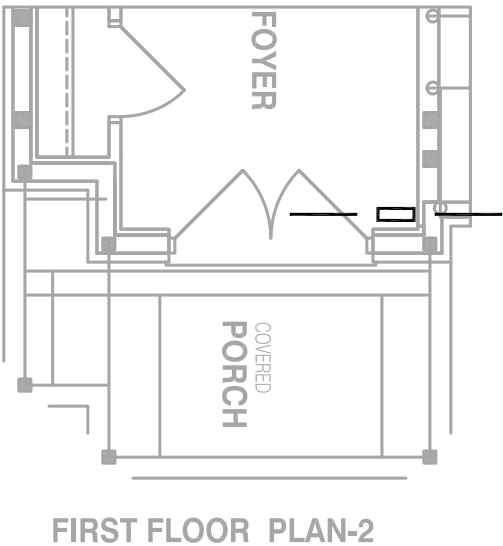
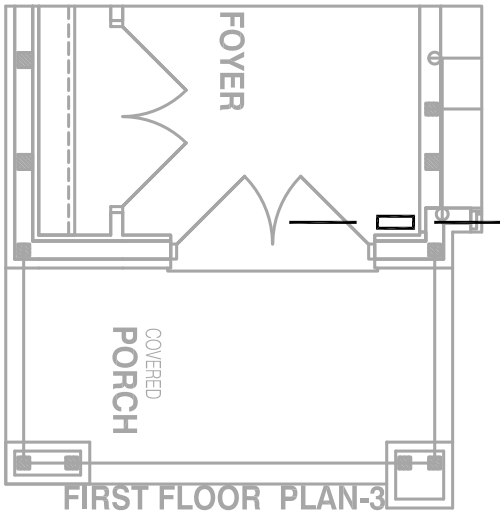
BASEMENT FLOOR PLAN-2

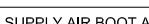
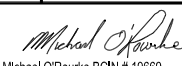
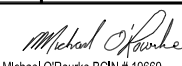


BASEMENT FLOOR PLAN-1

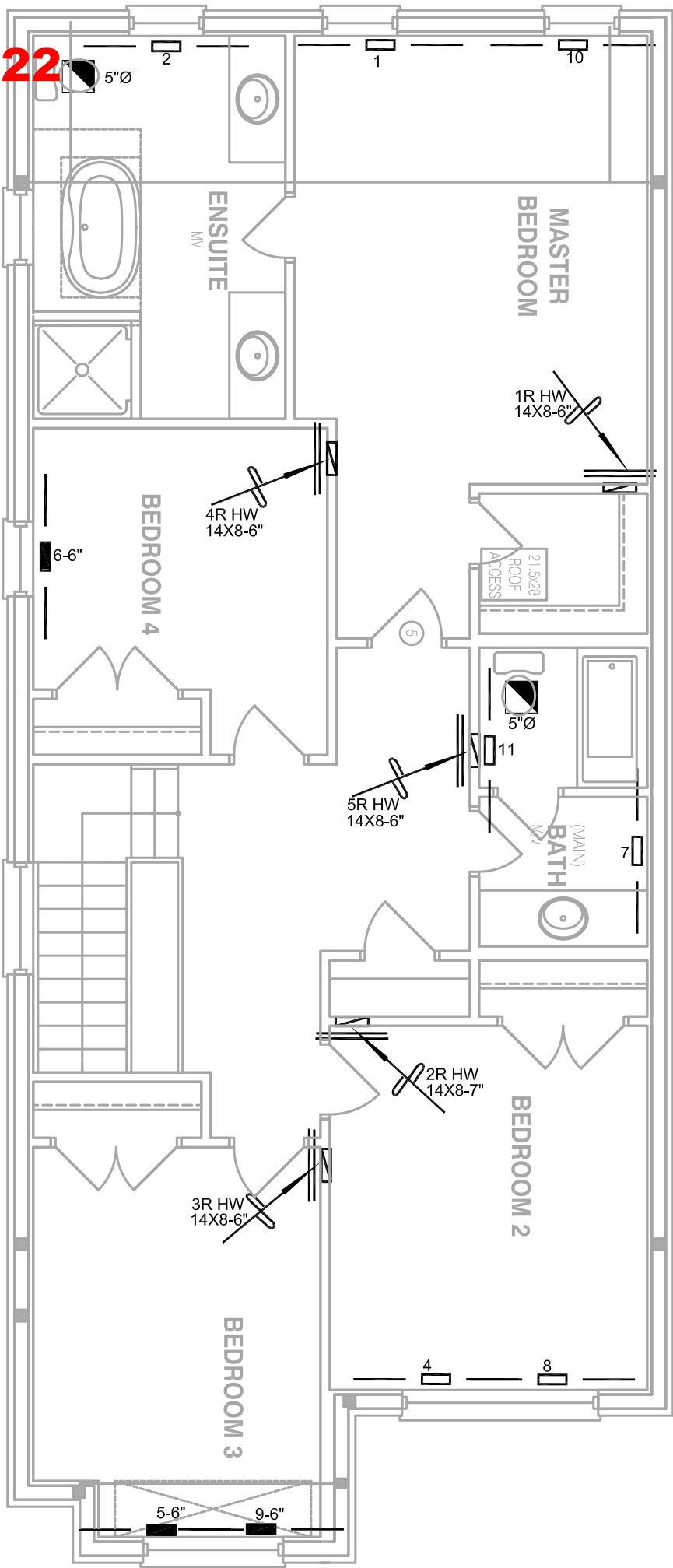
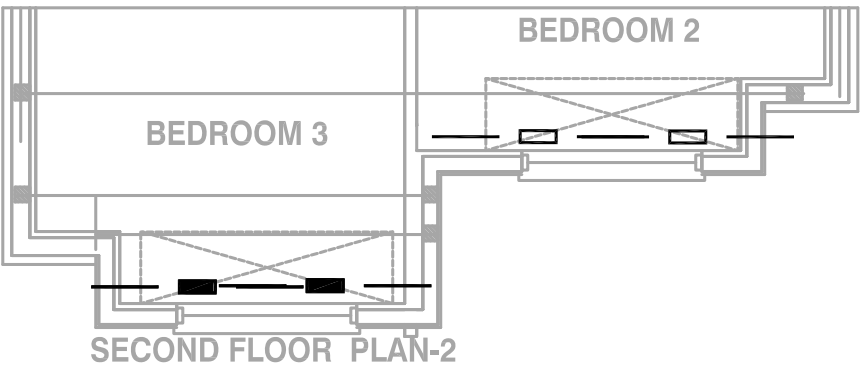
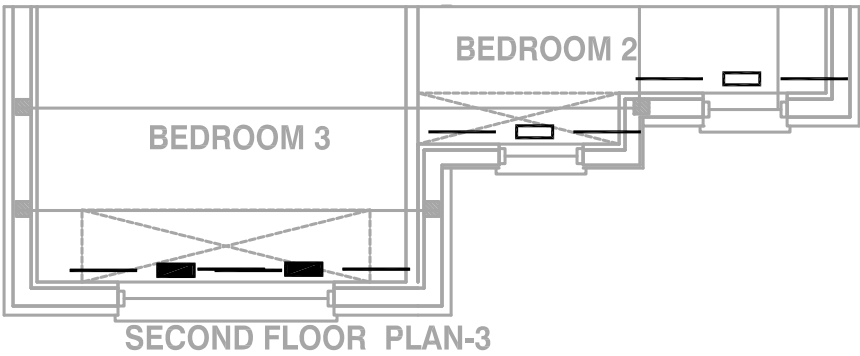
HVAC LEGEND								3.			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.			
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.			
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date	
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS			
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.						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		 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				HEAT LOSS 44004 BTU/H		# OF RUNS S/A R/A FANS		Sheet Title	
GREENPARK HOMES						UNIT DATA		3RD FLOOR		BASEMENT HEATING LAYOUT	
Project Name						GOODMAN		2ND FLOOR		10 5 2	
ZADORRA ESTATES INC		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.				MODEL		1ST FLOOR		Date	
OSHAWA, ONTARIO						GMEC960603BNA		6 2 3		MAY/2023	
						INPUT		BASEMENT		4 1 0	
RIVER 2						60 MBTU/H				Scale	
2315 sqft						OUTPUT		57.6 MBTU/H		3/16" = 1'-0"	
						COOLING		2.0 TONS		BCIN# 19669	
						FAN SPEED		928 cfm @ 0.6" w.c.		LO# 101173	
						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					

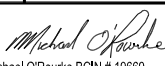
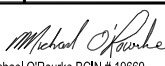
MHP 23022



HVAC LEGEND							3.						
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.					
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.					
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	DescriptionDate				
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS					
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.						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		 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.				 Michael O'Rourke BCIN # 19669 HVAC Designs Ltd. PACKAGE A1							
Project Name										Sheet Title			
ZADORRA ESTATES INC OSHAWA, ONTARIO										FIRST FLOOR HEATING LAYOUT			
RIVER 2		2315 sqft		Date				MAY/2023					
				Scale				3/16" = 1'-0"					
				BCIN#				19669					
				LO#				101173					

MHP 23022



HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	DescriptionDate
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS	
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.						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		 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.				 Michael O'Rourke BCIN # 19669 HVAC Designs Ltd. PACKAGE A1		Sheet Title	
GREENPARK HOMES								SECOND FLOOR HEATING LAYOUT	
Project Name								Date	
ZADORRA ESTATES INC OSHAWA, ONTARIO				MAY/2023					
				Scale					
				3/16" = 1'-0"					
				BCIN# 19669					
RIVER 2		2315 sqft		LO#					
				101173					