

MHP 23023

SITE NAME: ZADORRA ESTATES INC. CHIEF BUILDING OFFICIAL

BUILDER: GREENPARK HOMES

TYPE: RIVER 3

GFA: 2415

DATE: May-23

LO# 101237

WINTER NATURAL AIR CHANGE RATE 0.340

SUMMER NATURAL AIR CHANGE RATE 0.094

HEAT LOSS ΔT °F. 74

HEAT GAIN ΔT °F. 11

CSA-F280-12

SB-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	LOSS	GAIN	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH					
						42	24	10	26	32	13	11					
						9	9	9	9	9	9	9					
GRS.WALL AREA	GLAZING		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
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	20.8	24.4	0	0	0	0	0	0	0	0	0	10	208	244	14	291	342
WEST	20.8	41.0	20	416	821	13	270	534	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
DOORS	19.6	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.4	0.6	362	1578	234	205	895	133	91	396	59	207	900	133	258	1125	167
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
EXPOSED CLG	1.3	0.6	371	465	207	137	172	76	90	113	50	201	252	112	159	199	89
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	15	40	18	15	40	18	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	53	132	20	187	466	69	0	0	0
BASEMENT/CRAWL HEAT LOSS			0			0			0			0			0		
SLAB ON GRADE HEAT LOSS			0			0			0			0			0		
SUBTOTAL HT LOSS			2458			1337		641	2281		2050	854			820		
SUB TOTAL HT GAIN				1262			743		1564		1628	391			466		
LEVEL FACTOR / MULTIPLIER	0.20	0.26				0.20	0.26		0.20	0.26		0.20	0.26		0.20	0.26	
AIR CHANGE HEAT LOSS			649			353		169	602		541	225			217		
AIR CHANGE HEAT GAIN				75		44		8	93		97	23			28		
DUCT LOSS			0			0		81	288		0	0			0		
DUCT GAIN			0			0		14	266		0	0			0		
HEAT GAIN PEOPLE	240		2		480	0		0	1		240	1		240	0		
HEAT GAIN APPLIANCES/LIGHTS					766	0		0	766		766	766			0		
TOTAL HT LOSS BTU/H					3108		1690		3172		2591	1079			1037		
TOTAL HT GAIN x 1.3 BTU/H					3358		1023		3808		3550	1847			641		

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	LOSS	GAIN	LV/DN	FAM	KT/BF		LAUN	PWD	FOY	MUD					WOD	BAS
						30	52	24		6	5	31	20					33	162
						10	10	10		9	10	10	10					8	8
GRS.WALL AREA	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
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	24	499	985	0	0	0	0	0
SOUTH	20.8	24.4	28	582	683	0	0	0	26	540	634	0	0	0	0	0	0	10	208
WEST	20.8	41.0	0	0	0	74	1537	3038	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
DOORS	19.6	2.9	0	0	0	0	0	0	0	0	0	20	392	58	21	411	61	21	411
NET EXPOSED WALL	4.4	0.6	269	1172	174	441	1921	285	212	922	137	263	1145	170	177	771	114	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	192	675
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	61	76	34	0	0	0	0	0	387	1360
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
EXPOSED FLOOR	2.5	0.4	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	
SLAB ON GRADE HEAT LOSS			0			0			0			0			0			0	
SUBTOTAL HT LOSS			1754			3458		1462	429		331	2036		1182				799	7189
SUB TOTAL HT GAIN				857			3322		771		236	198		1213		175		346	506
LEVEL FACTOR / MULTIPLIER	0.30	0.42				0.30	0.42		0.30	0.42		0.30	0.42		0.30	0.42		0.50	0.90
AIR CHANGE HEAT LOSS			739			1456		616	113		139	857		498				7176	
AIR CHANGE HEAT GAIN				51		198		46		14		12		72		10			51
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	
HEAT GAIN APPLIANCES/LIGHTS					766	766		766	766		0	0		0		0		0	
TOTAL HT LOSS BTU/H			2492			4914		2078	543		470	2893		1680				799	14365
TOTAL HT GAIN x 1.3 BTU/H				2176		5572		2058	324		273	1671		241				450	1720

TOTAL HEAT GAIN BTU/H:

29145

TONS: 2.43

LOSS DUE TO VENTILATION LOAD BTU/H: 1593

STRUCTURAL HEAT LOSS: 43803

TOTAL COMBINED HEAT LOSS BTU/H: 45396

SITE NAME: ZADORRA E.
BUILDER: GREENPARK HOMES LTD. (SCHEDULING OFFICIAL)

TYPE: RIVER 3

DATE: May-23

GFA: 2415

LO# 101237

HEATING CFM	928	COOLING CFM	928
TOTAL HEAT LOSS	43,803	TOTAL HEAT GAIN	28,909
AIR FLOW RATE CFM	21.19	AIR FLOW RATE CFM	32.1

furnace pressure	0.6
furnace filter	0.05
a/c coil pressure	0.2
available pressure for s/a & r/a	0.35

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

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	12	8	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.

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

FAN SPEED LOW
MEDLOW
MEDIUM 928
MEDIUM HIGH 1017
HIGH 1131DESIGN CFM = 928
CFM @ .6" E.S.P.

TEMPERATURE RISE 57 °F

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.	1.55	1.69	0.89	1.59	1.30	1.08	0.52	1.59	1.30	1.55	0.52	2.49	2.46	1.04	1.04	2.46	0.54	0.47	2.89	1.68	3.79	3.79	3.79	3.79
CFM PER RUN HEAT	33	36	19	34	27	23	11	34	27	33	11	53	52	22	22	52	11	10	61	36	80	80	80	80
RM GAIN MBH.	1.68	1.02	0.19	1.90	1.78	1.85	0.32	1.90	1.78	1.68	0.32	2.18	2.79	1.03	1.03	2.79	0.32	0.27	1.67	0.24	0.54	0.54	0.54	0.54
CFM PER RUN COOLING	54	33	6	61	57	59	10	61	57	54	10	70	89	33	33	89	10	9	54	8	17	17	17	17
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.	43	43	26	71	64	40	33	76	68	37	62	26	35	21	25	29	14	41	46	33	30	16	19	36
EQUIVALENT LENGTH	180	170	180	170	140	160	180	170	180	160	160	130	110	100	110	90	150	170	110	120	130	100	150	110
TOTAL EFFECTIVE LENGTH	223	213	206	241	204	200	213	246	248	197	222	156	145	121	135	119	164	211	156	153	160	116	169	146
ADJUSTED PRESSURE	0.08	0.08	0.08	0.07	0.08	0.09	0.08	0.07	0.07	0.09	0.08	0.11	0.11	0.14	0.13	0.14	0.1	0.08	0.11	0.11	0.11	0.15	0.1	0.12
ROUND DUCT SIZE	5	4	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)	242	413	218	250	198	117	126	250	198	242	126	389	265	252	252	265	126	115	448	413	587	587	587	587
COOLING VELOCITY (ft/min)	396	379	69	448	419	301	115	448	419	396	115	514	454	379	379	454	115	103	396	92	125	125	125	125
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	B	A	A	D	B	B	D	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
1	MBR	1.55	33	1.68	54	0.17	43	180	223	0.08	5	242	396	3X10	D
2	ENS	1.69	36	1.02	33	0.17	43	170	213	0.08	4	413	379	3X10	C
3	WIC	0.89	19	0.19	6	0.17	26	180	206	0.08	4	218	69	3X10	D
4	BED-2	1.59	34	1.90	61	0.17	71	170	241	0.07	5	250	448	3X10	A
5	BED-3	1.30	27	1.78	57	0.17	64	140	204	0.08	5	198	419	3X10	A
6	BED-4	1.08	23	1.85	59	0.17	40	160	200	0.09	6	117	301	4X10	C
7	BATH	0.52	11	0.32	10	0.17	33	180	213	0.08	4	126	115	3X10	B
8	BED-2	1.59	34	1.90	61	0.17	76	170	246	0.07	5	250	448	3X10	A
9	BED-3	1.30	27	1.78	57	0.17	68	180	248	0.07	5	198	419	3X10	A
10	MBR	1.55	33	1.68	54	0.17	37	160	197	0.09	5	242	396	3X10	D
11	BATH	0.52	11	0.32	10	0.17	62	160	222	0.08	4	126	115	3X10	B
12	LV/DN	2.49	53	2.18	70	0.17	26	130	156	0.11	5	389	514	3X10	B
13	FAM	2.46	52	2.79	89	0.16	35	110	145	0.11	6	265	454	4X10	D
14	KT/BF	1.04	22	1.03	33	0.17	21	100	121	0.14	4	252	379	3X10	C
15	KT/BF	1.04	22	1.03	33	0.17	25	110	135	0.13	4	252	379	3X10	C
16	FAM	2.46	52	2.79	89	0.16	29	90	119	0.14	6	265	454	4X10	D
17	LAUN	0.54	11	0.32	10	0.17	14	150	164	0.1	4	126	115	3X10	B
18	PWD	0.47	10	0.27	9	0.17	41	170	211	0.08	4	115	103	3X10	A
19	FOY	2.89	61	1.67	54	0.17	46	110	156	0.11	5	448	396	3X10	A
20	MUD	1.68	36	0.24	8	0.17	33	120	153	0.11	4	413	92	3X10	B
21	BAS	3.79	80	0.54	17	0.17	30	100	160	0.11	5	587	125	3X10	C
22	BAS	3.79	80	0.54	17	0.17	16	100	116	0.15	5	587	125	3X10	D
23	BAS	3.79	80	0.54	17	0.17	19	150	169	0.1	5	587	125	3X10	B
24	BAS	3.79	80	0.54	17	0.17	36	110	146	0.12	5	587	125	3X10	B

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)	RETURN AIR TRUNK SIZE	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	193	0.07	7.8	8	x 8	434	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK B	475	0.07	11	14	x 8	611	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK C	183	0.08	7.4	8	x 8	412	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK D	927	0.07	14.1	24	x 8	695	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK E	0	0.00	0	0	x 8	0	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK F	0	0.00	0	0	x 8	0	0	0.00	0	0	x 8	0	0.05	0	0	x 8

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
AIR VOLUME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	37	51	53	43	81	21	49	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	220	135	215	175	195	135	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	257	186	268	218	276	156	249	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.06	0.08	0.06	0.07	0.05	0.09	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80
ROUND DUCT SIZE	6.7	6	6.3	6	6	6.6	6.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	X	X	X	X	X	X	X	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	0	0	0	0	0	0	0	0

TYPE: RIVER 3
SITE NAME: ZADORRA ESTATES INC. OFFICIAL

MHP 23023

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	<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>4</u> @ 10.6 cfm <u>42.4</u> cfm
Table 9.32.3.A.	TOTAL <u>159.0</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	<u>79.5</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY	9.32.3.5.
Total Ventilation Capacity	<u>159</u> cfm
Less Principal Ventil. Capacity	<u>79.5</u> cfm
Required Supplemental Capacity	<u>79.5</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 @ 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: 
HRAI # 001820
Date: May-23

MHP 23023

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 101237	Model: RIVER 3	Builder: GREENPARK HOMES	Date: 2023-05-16																																																									
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>1088</td> <td>8</td> <td>8921.6</td> </tr> <tr> <td>First</td> <td>1088</td> <td>10</td> <td>10771.2</td> </tr> <tr> <td>Second</td> <td>1327</td> <td>9</td> <td>12075.7</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="2" style="text-align: right;">Total:</td> <td></td> <td>31,768.5 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>899.6 m³</td> </tr> </tbody> </table>		Level	Floor Area (ft ²)	Floor Height (ft)	Volume (ft ³)	Bsmt	1088	8	8921.6	First	1088	10	10771.2	Second	1327	9	12075.7	Third	0	9	0	Fourth	0	9	0	Total:			31,768.5 ft ³	Total:			899.6 m ³	<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" style="text-align: center;">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
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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 249.88 x 41 °C x 1.2 = 4206 W = 14352 Btu/h		$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.094 x 249.88 x 6 °C x 1.2 = 171 W = 585 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)																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																												
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 / HL _{clevel})																																																								
1	0.5	14,352	7,988	0.898																																																								
2	0.3		10,222	0.421																																																								
3	0.2		10,871	0.264																																																								
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 BCIN# 19669 																																																								

MODEL: RIVER 3

SFQT: 2415

LO# 101237

BUILDER: GREENPARK HOMES

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):	31768.5	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.75	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	5.2 ft
LENGTH: 58.0 ft	WIDTH: 23.0 ft	EXPOSED PERIMETER:	162.0 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

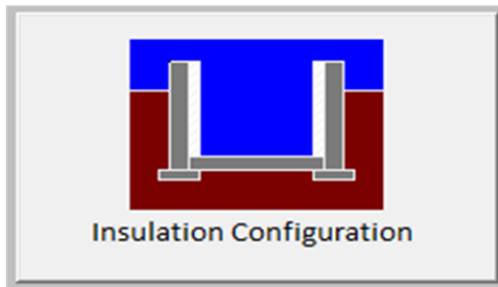
MICHAEL O'ROURKE

Michael O'Rourke

MHP 23023

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):	17.7	 Insulation Configuration
Floor Width (m):	7.0	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.5	
Depth Below Grade (m):	1.58	
Window Area (m ²):	1.5	
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):		1527 ✓

TYPE: RIVER 3
 LO# 101237

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

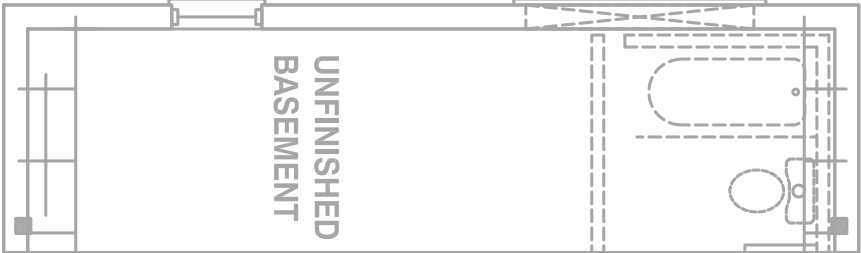
Weather Station Description			
Province:	Ontario		
Region:	Oshawa		
Weather Station Location:	Open flat terrain, grass		
Anemometer height (m):	10		
Local Shielding			
Building Site:	Suburban, forest		
Walls:	Heavy		
Flue:	Heavy		
Highest Ceiling Height (m):	7.62		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	899.6		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1199.2 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
Diameter (mm):	0	0	0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.340		
Cooling Air Leakage Rate (ACH/H):	0.094		

TYPE: RIVER 3

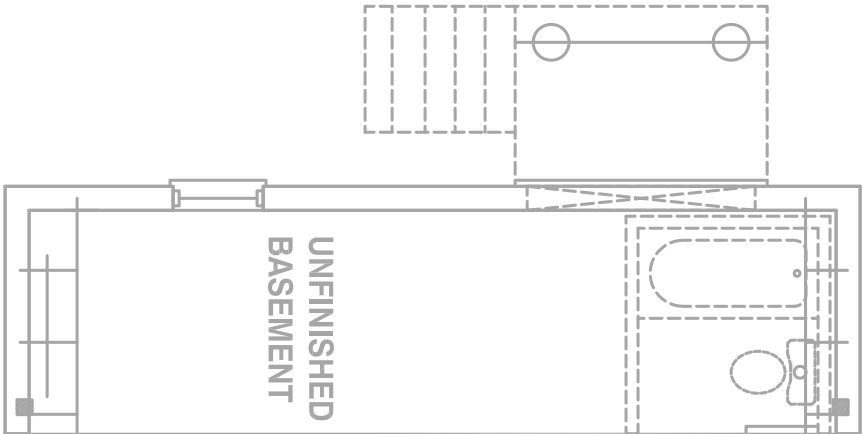
LO# 101237

Michael O'Rourke BCIN# 19669

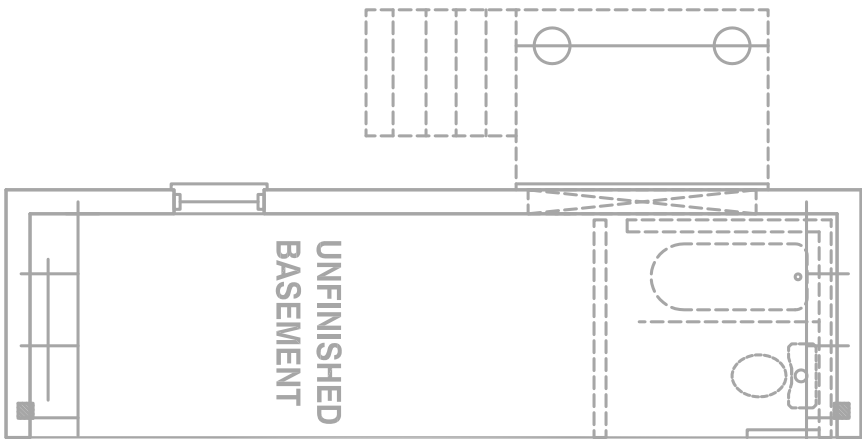




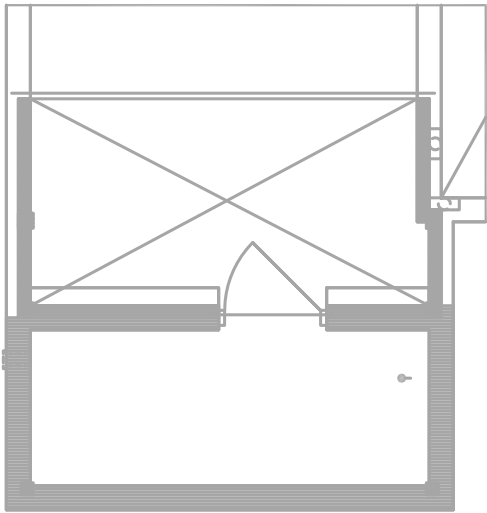
PARTIAL BASEMENT LAYOUT
FOR DECK CONDITION EL-1



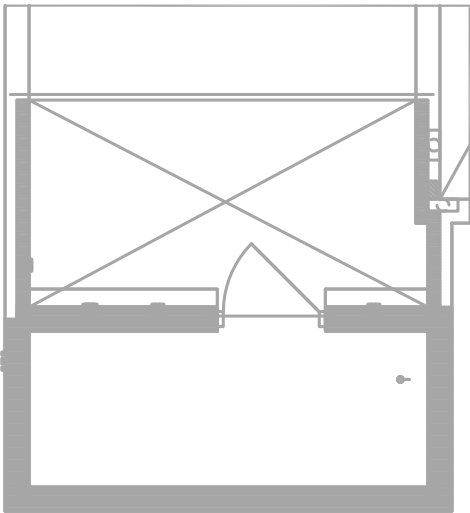
PARTIAL BASEMENT LAYOUT
FOR DECK CONDITION EL-3



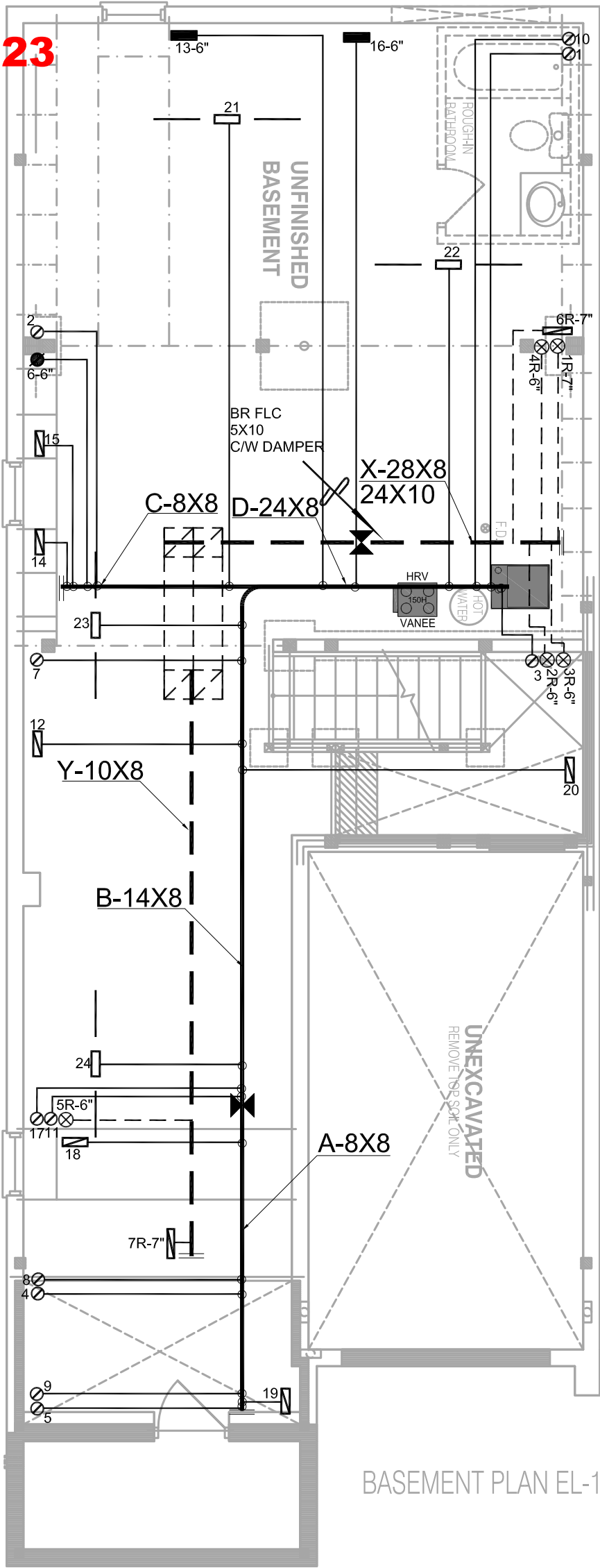
PARTIAL BASEMENT LAYOUT
FOR DECK CONDITION EL-2



BASEMENT PLAN EL-2

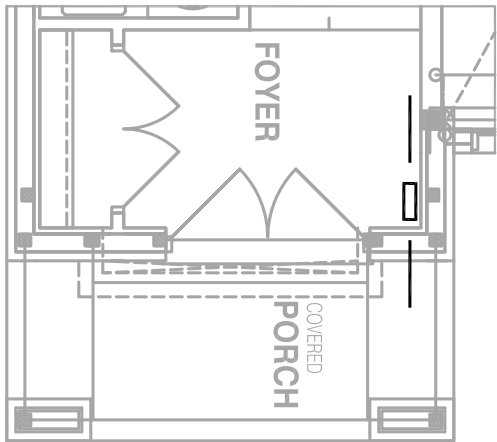


BASEMENT PLAN EL-3

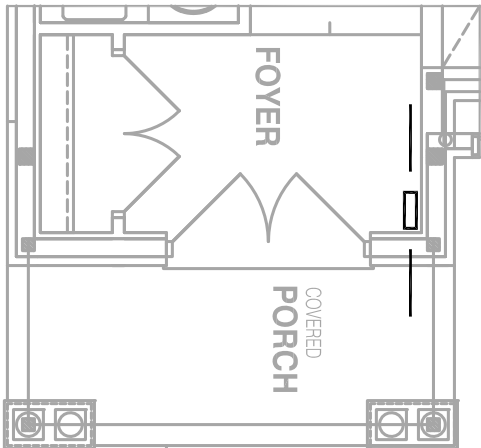


BASEMENT PLAN EL-1

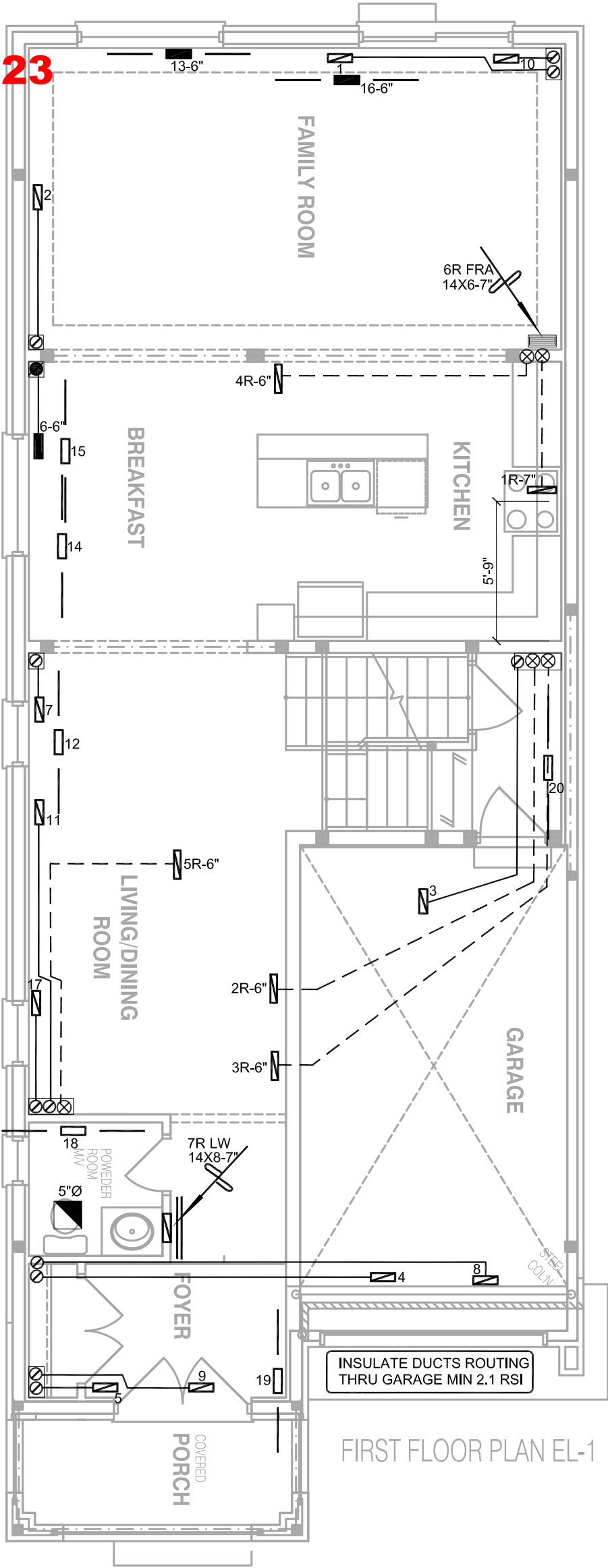
HVAC LEGEND								3.						
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.						
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.						
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		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						
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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 45396 BTU/H		# OF RUNS S/A R/A FANS		Sheet Title				
GREENPARK HOMES						UNIT DATA		3RD FLOOR				BASEMENT		
Project Name						GOODMAN		2ND FLOOR		12	5	2	HEATING	
ZADORRA ESTATES INC						GMEC960603BNA		1ST FLOOR		8	2	2	LAYOUT	
OSHAWA, ONTARIO						INPUT		60 MBTU/H		BASEMENT		4	1	0
		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.				OUTPUT		57.6 MBTU/H		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				
						COOLING		2.5 TONS						
						FAN SPEED		928 cfm @ 0.6" w.c.						
RIVER 3		2415 sqft								BCIN# 19669		LO#	101237	



FIRST FLOOR PLAN EL-3

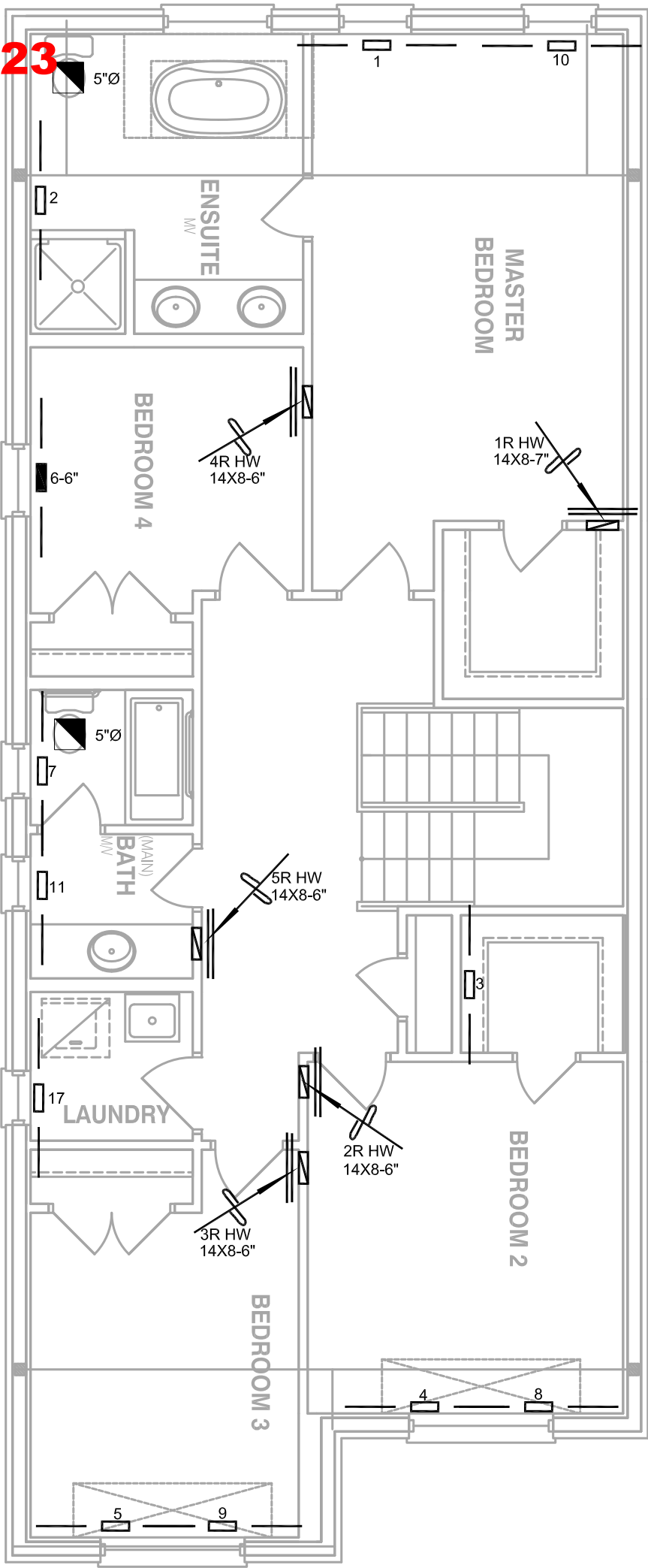
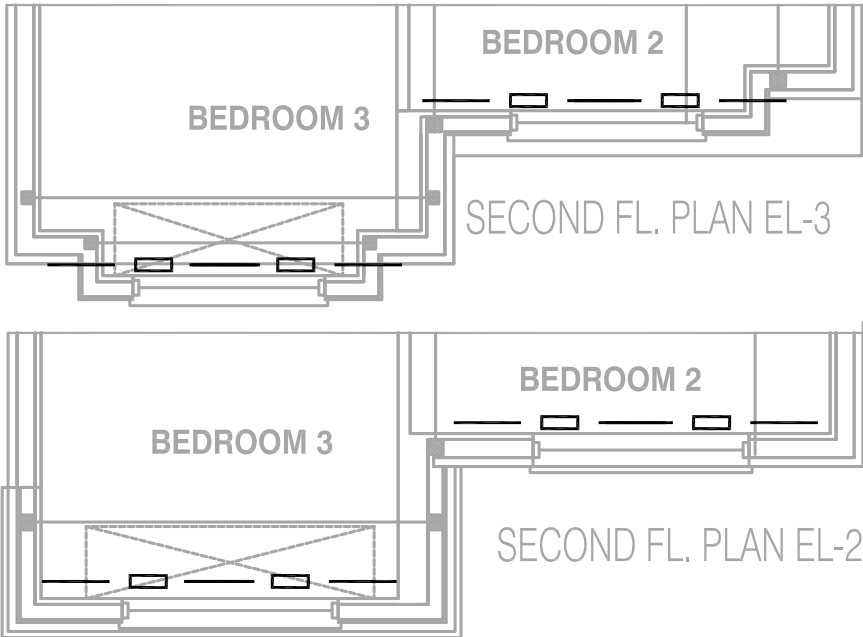


FIRST FLOOR PLAN EL-2



FIRST FLOOR PLAN EL-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		
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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							Sheet Title	
Project Name									FIRST FLOOR HEATING LAYOUT	
ZADORRA ESTATES INC OSHAWA, ONTARIO									Date MAY/2023	
RIVER 3		2415 sqft		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.				Scale 3/16" = 1'-0"		
								BCIN# 19669		
								LO#	101237	



SECOND FL. PLAN EL-1

HVAC LEGEND						3.		
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	2.
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	1.
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	No.
						REVISIONS		
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Client						 Michael O'Rourke BCIN # 19669 HVAC Designs Ltd.		
Project Name						PACKAGE A1		
GREENPARK HOMES						Sheet Title		
ZADORRA ESTATES INC OSHAWA, ONTARIO						SECOND FLOOR HEATING LAYOUT		
						Date MAY/2023		
						Scale 3/16" = 1'-0"		
						BCIN# 19669		
RIVER 3 2415 sqft						LO# 101237		