

Garden 3 - Elevation 3

SITE NAME: BARLASSINA						OPT 4 BED						DATE: Jan-23						WINTER NATURAL AIR CHANGE RATE 0.335						HEAT LOSS ΔT °F. 72		CSA-F280-12							
BUILDER: GREENPARK HOMES						TYPE: GARDEN 3						GFA: 2415						LO# 99995						SUMMER NATURAL AIR CHANGE RATE 0.091						HEAT GAIN ΔT °F. 9		SB-12 PACKAGE A1	
ROOM USE		MBR				ENS				BED-2				BED-3				BED-4				BATH											
EXP. WALL		46				23				33				34				13				12											
CLG. HT.		9				9				9				9				9				9											
FACTORS																																	
GRS.WALL AREA		LOSS		GAIN		414		207		297		306		117		108																	
GLAZING				LOSS		GAIN		LOSS		GAIN		LOSS		GAIN		LOSS		GAIN															
NORTH		20.3	14.4	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					
EAST		20.3	38.7	0	0	0	0	0	0	0	0	33	669	1278	30	608	1162	0	0	0	0	0	0	0	0	0	0	0					
SOUTH		20.3	22.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	324	366	14	284	320	0	0	0	0	0					
WEST		20.3	38.7	20	405	775	14	284	542	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
SKYLT.		35.5	99.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
DOORS		19.1	2.4	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					
NET EXPOSED WALL		4.3	0.5	394	1675	213	193	821	104	264	1122	143	276	1173	149	101	429	55	94	400	51	0	0	0	0	0	0	0					
NET EXPOSED BSMT WALL ABOVE GR		3.4	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					
EXPOSED CLG		1.2	0.5	303	370	160	182	223	96	213	260	112	194	237	102	167	204	88	121	148	64	0	0	0	0	0	0	0					
NO ATTIC EXPOSED CLG		2.6	1.1	0	0	0	0	0	0	15	39	17	15	39	17	0	0	0	0	0	0	0	0	0	0	0	0	0					
EXPOSED FLOOR		2.4	0.3	0	0	0	0	0	0	0	0	0	240	583	74	29	70	9	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		2451				1327				2091				2641				1028				831											
SUB TOTAL HT GAIN		1147				742				1550				1504				518				435											
LEVEL FACTOR / MULTIPLIER		0.20	0.25			0.20	0.25			0.20	0.25			0.20	0.25			0.20	0.25														
AIR CHANGE HEAT LOSS		618				334				527				665				259				209											
AIR CHANGE HEAT GAIN		62				40				84				82				28				24											
DUCT LOSS		0				0				0				331				129				0											
DUCT GAIN		0				0				0				232				128				0											
HEAT GAIN PEOPLE		240	2	480	0	0	1	240	0	1	240	1	240	1	240	0	240	0	0	0	0	0	0	0	0	0	0	0					
HEAT GAIN APPLIANCES/LIGHTS		494				0				494				494				494				0											
TOTAL HT LOSS BTU/H		3068				1661				2618				3637				1416				1041											
TOTAL HT GAIN x 1.3 BTU/H		2839				1018				3079				3319				1830				596											

ROOM USE			LIV/DIN			K/F/B			LAUN			W/R			FOY			MUD									LOD			BAS		
EXP. WALL			32			77			6			6			33			22									34			162		
CLG. HT.			10			10			9			10			11			11									8			8		
FACTORS																																
GRS.WALL AREA	LOSS	GAIN	320			770			54			60			363			242									272			912		
GLAZING			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN						LOSS	GAIN		LOSS	GAIN			
NORTH	20.3	14.4	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			
EAST	20.3	38.7	0	0	0	0	0	0	0	0	0	0	0	0	20	405	775	0	0	0	0	0	0	0	0	0	0	0	0			
SOUTH	20.3	22.9	28	568	641	28	568	641	7	142	160	7	142	160	0	0	0	0	0	0	0	0	0	0	0	0	10	203	229			
WEST	20.3	38.7	0	0	0	56	1135	2169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	142	271	0			
SKYLT.	35.5	99.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
DOORS	19.1	2.4	0	0	0	25	478	61	0	0	0	0	0	0	28	535	68	21	401	51	0	0	0	0	0	21	401	51	0			
NET EXPOSED WALL	4.3	0.5	292	1241	158	661	2810	357	47	200	25	53	225	29	315	1339	170	221	940	119	0	0	0	0	0	0	0	0	0			
NET EXPOSED BSMT WALL ABOVE GR	3.4	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	197	675	86	384	1316	167	0	0	0			
EXPOSED CLG	1.2	0.5	0	0	0	0	0	0	108	132	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
NO ATTIC EXPOSED CLG	2.6	1.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
EXPOSED FLOOR	2.4	0.3	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														
SLAB ON GRADE HEAT LOSS			0			0			0			0			0			0														
SUBTOTAL HT LOSS			1809			4991			474			367			2279			1341									817			7089		
SUB TOTAL HT GAIN			798			3228			242			189			1013			170									357			447		
LEVEL FACTOR / MULTIPLIER	0.30	0.38				0.30 0.38			0.20 0.25			0.30 0.38			0.30 0.38			0.30 0.38									0.50 0.86					
AIR CHANGE HEAT LOSS			687			1896			119			140			866			509									6831					
AIR CHANGE HEAT GAIN			43			176			13			10			55			9									44					
DUCT LOSS			0			0			0			0			0			0									0					
DUCT GAIN			0			0			0			0			0			0									0					
HEAT GAIN PEOPLE	240		0			0			0			0			0			0									0			0		
HEAT GAIN APPLIANCES/LIGHTS			494			494			494			0			0			494									494					
TOTAL HT LOSS BTU/H			2496			6887			593			507			3146			1850									817			13920		
TOTAL HT GAIN x 1.3 BTU/H			1737			5067			975			259			1388			876									464			1281		

TOTAL HEAT GAIN BTU/H:

24926

TONS: 2.08

LOSS DUE TO VENTILATION LOAD BTU/H: 1554

STRUCTURAL HEAT LOSS: 43657

TOTAL COMBINED HEAT LOSS BTU/H: 45211

SITE NAME: BARLASSINA
BUILDER: GREENPARK HOMES

OPT 4 BED
TYPE: GARDEN 3

DATE: Jan-23

GFA: 2415 LO# 99995

HEATING CFM 928 COOLING CFM 928
TOTAL HEAT LOSS 43,657 TOTAL HEAT GAIN 24,728
AIR FLOW RATE CFM 21.26 AIR FLOW RATE CFM 37.53

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

TEMPERATURE RISE 57 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	11	7	4
R/A	0	0	5	1	1

All S/A diffusers 4"x10" unless noted otherwise on layout.

All S/A runs 5"Ø unless noted otherwise on layout.

RUN #	1	2	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	BATH	BED-2	BED-3	MBR	BATH	LIV/DIN	K/F/B	K/F/B	K/F/B	LAUN	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.53	1.66	1.31	1.82	1.42	0.52	1.31	1.82	1.53	0.52	2.50	2.30	2.30	2.30	0.59	0.51	3.15	1.85	3.68	3.68	3.68	3.68
CFM PER RUN HEAT	33	35	28	39	30	11	28	39	33	11	53	49	49	49	13	11	67	39	78	78	78	78
RM GAIN MBH.	1.42	1.02	1.54	1.66	1.83	0.30	1.54	1.66	1.42	0.30	1.74	1.69	1.69	1.69	0.97	0.26	1.39	0.88	0.44	0.44	0.44	0.44
CFM PER RUN COOLING	53	38	58	62	69	11	58	62	53	11	65	63	63	63	37	10	52	33	16	16	16	16
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	30	53	64	70	40	36	70	77	40	63	29	38	27	31	57	48	63	51	35	25	33	47
EQUIVALENT LENGTH	160	160	150	160	140	200	140	170	170	170	150	120	170	110	180	160	130	140	110	130	130	170
TOTAL EFFECTIVE LENGTH	190	213	214	230	180	236	210	247	210	233	179	158	197	141	237	208	193	191	145	155	163	217
ADJUSTED PRESSURE	0.09	0.08	0.08	0.07	0.1	0.07	0.08	0.07	0.08	0.07	0.1	0.11	0.09	0.12	0.07	0.08	0.09	0.09	0.12	0.11	0.11	0.08
ROUND DUCT SIZE	5	4	5	6	6	4	5	6	5	4	5	5	5	5	5	4	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	242	402	206	199	153	126	206	199	242	126	389	360	360	360	95	126	492	447	398	398	398	398
COOLING VELOCITY (ft/min)	389	436	426	316	352	126	426	316	389	126	477	463	463	463	272	115	382	379	82	82	82	82
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	C	A	A	C	B	A	A	D	B	B	C	D	C	B	A	A	B	C	D	B	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
1	MBR	1.53	33	1.42	53	0.17	30	160	190	0.09	5	242	389	3X10	D
2	ENS	1.66	35	1.02	38	0.17	53	160	213	0.08	4	402	436	3X10	C
4	BED-2	1.31	28	1.54	58	0.17	64	150	214	0.08	5	206	426	3X10	A
5	BED-3	1.82	39	1.66	62	0.17	70	160	230	0.07	6	199	316	4X10	A
6	BED-4	1.42	30	1.83	69	0.17	40	140	180	0.1	6	153	352	4X10	C
7	BATH	0.52	11	0.30	11	0.17	36	200	236	0.07	4	126	126	3X10	B
8	BED-2	1.31	28	1.54	58	0.17	70	140	210	0.08	5	206	426	3X10	A
9	BED-3	1.82	39	1.66	62	0.17	77	170	247	0.07	6	199	316	4X10	A
10	MBR	1.53	33	1.42	53	0.17	40	170	210	0.08	5	242	389	3X10	D
11	BATH	0.52	11	0.30	11	0.17	63	170	233	0.07	4	126	126	3X10	B
13	LIV/DIN	2.50	53	1.74	65	0.17	29	150	179	0.1	5	389	477	3X10	B
14	K/F/B	2.30	49	1.69	63	0.17	38	120	158	0.11	5	360	463	3X10	C
15	K/F/B	2.30	49	1.69	63	0.17	27	170	197	0.09	5	360	463	3X10	D
16	K/F/B	2.30	49	1.69	63	0.17	31	110	141	0.12	5	360	463	3X10	C
17	LAUN	0.59	13	0.97	37	0.17	57	180	237	0.07	5	95	272	3X10	B
18	W/R	0.51	11	0.26	10	0.17	48	160	208	0.08	4	126	115	3X10	A
19	FOY	3.15	67	1.39	52	0.17	63	130	193	0.09	5	492	382	3X10	A
20	MUD	1.85	39	0.88	33	0.17	51	140	191	0.09	4	447	379	3X10	B
21	BAS	3.68	78	0.44	16	0.17	35	110	145	0.12	6	398	82	4X10	C
22	BAS	3.68	78	0.44	16	0.17	25	130	155	0.11	6	398	82	4X10	D
23	BAS	3.68	78	0.44	16	0.17	33	130	163	0.11	6	398	82	4X10	B
24	BAS	3.68	78	0.44	16	0.17	47	170	217	0.08	6	398	82	4X10	A

SUPPLY AIR TRUNK SIZE																RETURN AIR TRUNK SIZE									
	TRUNK	STATIC	ROUND	RECT			VELOCITY		TRUNK	STATIC	ROUND	RECT			VELOCITY		TRUNK	STATIC	ROUND	RECT			VELOCITY		
	CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)		
TRUNK A	290	0.07	9.1	10	x	8	522		TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.05	0	0	x	8	0	
TRUNK B	495	0.07	11.1	14	x	8	636		TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.05	0	0	x	8	0	
TRUNK C	241	0.08	8.2	8	x	8	542		TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.05	0	0	x	8	0	
TRUNK D	434	0.08	10.3	12	x	8	651		TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.05	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 S	0	0.05	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	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	562	0.05	12.7	18	x	8	562		
																TRUNK Z	160	0.05	7.9	8	x	8	360		
																DROP	928	0.05	15.3	24	x	10	557		

RETURN AIR #	1	2	3	4	5	6											BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
AIR VOLUME	115	80	80	95	320	82	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		
ACTUAL DUCT LGH.	39	73	74	63	49	83	1	1	1	1	1	1	1	1	16		
EQUIVALENT LENGTH	155	225	230	200	200	215	0	0	0	0	0	0	0	0	175		
TOTAL EFFECTIVE LH	194	298	304	263	249	298	1	1	1	1	1	1	1	1	191		
ADJUSTED PRESSURE	0.08	0.05	0.05	0.06	0.06	0.05	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.08		
ROUND DUCT SIZE	6.2	6.1	6.1	6.2	9.8	6.2	0	0	0	0	0	0	0	0	7		
INLET GRILL SIZE	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		
INLET GRILL SIZE	14	14	14	14	30	14	0	0	0	0	0	0	0	0	14		

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	115	80	80	95	320	82	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.	39	73	74	63	49	83	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	155	225	230	200	200	215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	194	298	304	263	249	298	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.08	0.05	0.05	0.06	0.06	0.05	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	14.80
ROUND DUCT SIZE	6.2	6.1	6.1	6.2	9.8	6.2	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	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	30	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: GARDEN 3
SITE NAME: BARLASSINA

LO # 99995
OPT 4 BED

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>5</u> @ 10.6 cfm	<u>53.0</u> cfm
Table 9.32.3.A.	TOTAL	<u>169.6</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>169.6</u>	cfm
Less Principal Ventil. Capacity	<u>79.5</u>	cfm
Required Supplemental Capacity	<u>90.1</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 72 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
W/R	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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	January-23

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 99995	Model: GARDEN 3	Builder: GREENPARK HOMES	Date: 1/18/2023																																																									
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>8704</td> </tr> <tr> <td>First</td> <td>1088</td> <td>10</td> <td>10880</td> </tr> <tr> <td>Second</td> <td>1327</td> <td>9</td> <td>11943</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>31,527.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>892.7 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1088	8	8704	First	1088	10	10880	Second	1327	9	11943	Third	0	9	0	Fourth	0	9	0	Total:			31,527.0 ft³	Total:			892.7 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 30%;">0.335</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.091</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <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> </thead> <tbody> <tr> <td>Winter DTDh</td> <td>22</td> <td>-18</td> <td>40</td> <td>72</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>29</td> <td>5</td> <td>9</td> </tr> </tbody> </table>		WINTER NATURAL AIR CHANGE RATE	0.335	SUMMER NATURAL AIR CHANGE RATE	0.091	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-18	40	72	Summer DTDc	24	29	5	9
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.335 x 247.98 x 40 °C x 1.2 = 4004 W = 13661 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.091 x 247.98 x 5 °C x 1.2 = 139 W = 475 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 72 °F x 1.08 x 0.25 = 1554 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 9 °F x 1.08 x 0.25 = 197 Btu/h																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																												
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HL _{clevel})																																																								
1	0.5	13,661	7,906	0.864																																																								
2	0.3		10,787	0.380																																																								
3	0.2		10,843	0.252																																																								
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 																																																								

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: GARDEN 3	OPT 4 BED	BUILDER: GREENPARK HOMES
SFQT: 2415	LO# 99995	SITE: BARLASSINA

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	0	OUTDOOR DESIGN TEMP.	84
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):	31527.0	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:	5.0 ft
LENGTH: 57.0 ft	WIDTH: 24.0 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	-

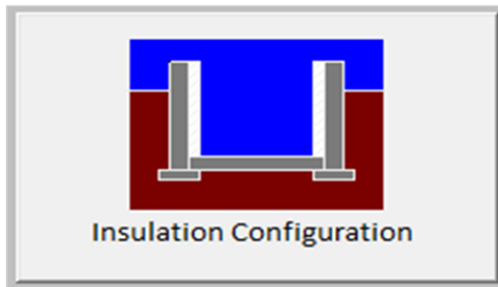
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Cambridge	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	17.4	 Insulation Configuration
Floor Width (m):	7.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.4	
Depth Below Grade (m):	1.52	
Window Area (m ²):	1.6	
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):		1515

TYPE: GARDEN 3
LO# 99995

OPT 4 BED

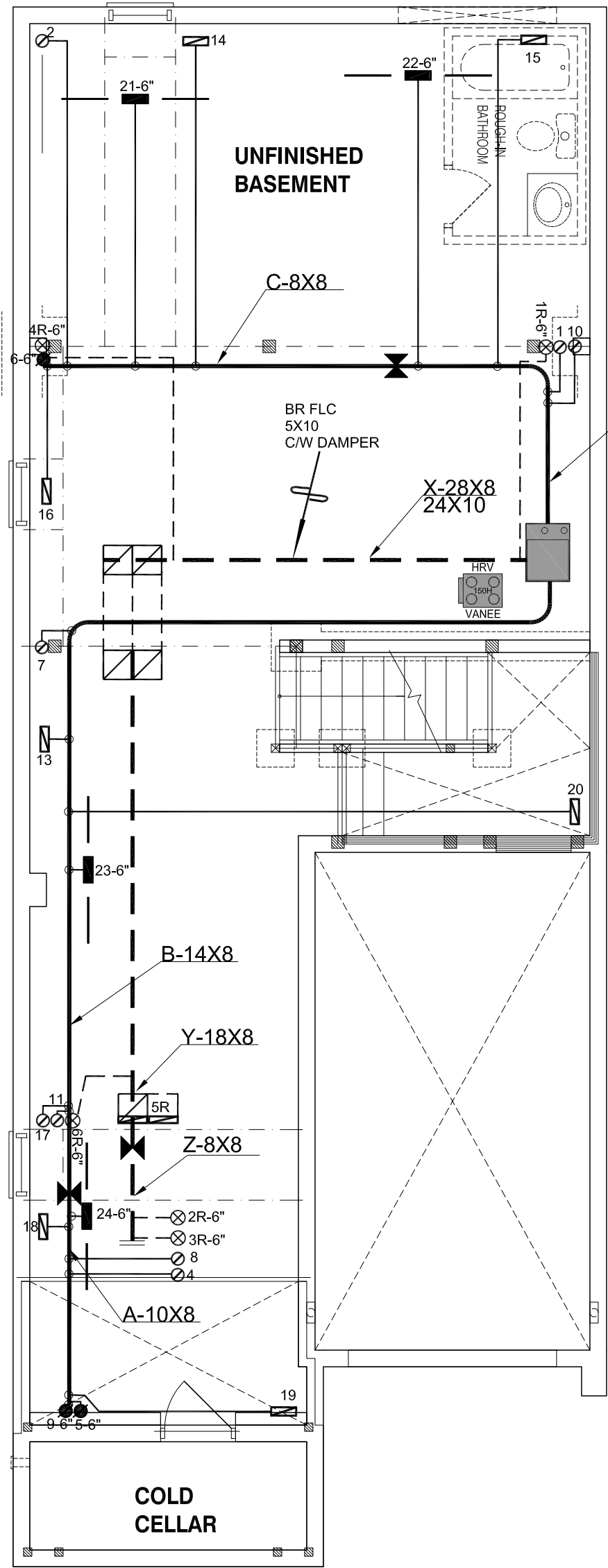
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

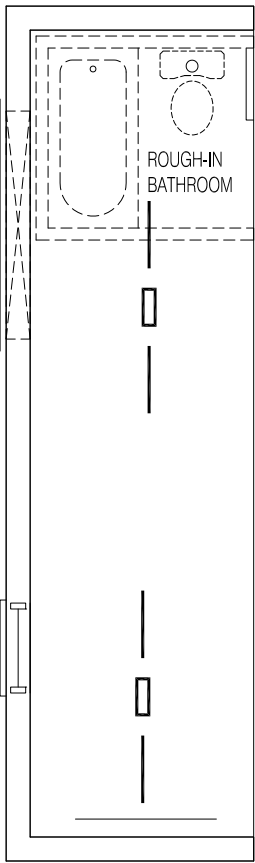
Weather Station Description				
Province:	Ontario			
Region:	Cambridge			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	7.62			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	892.7			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1190.1 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):	0.335			
Cooling Air Leakage Rate (ACH/H):	0.091			

TYPE: GARDEN 3
LO# 99995

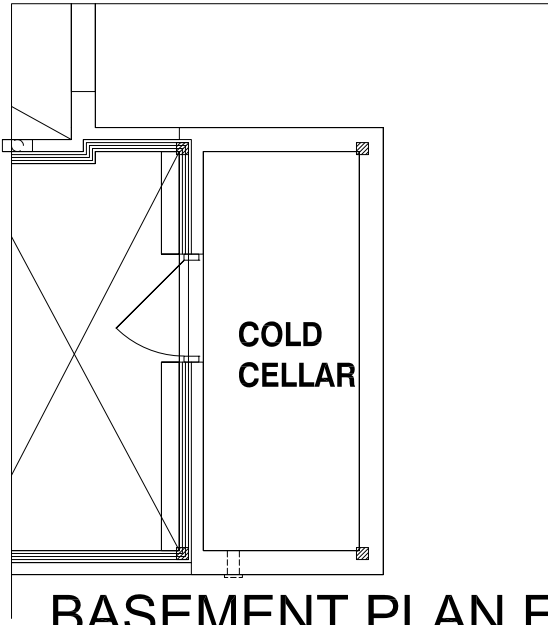
OPT 4 BED



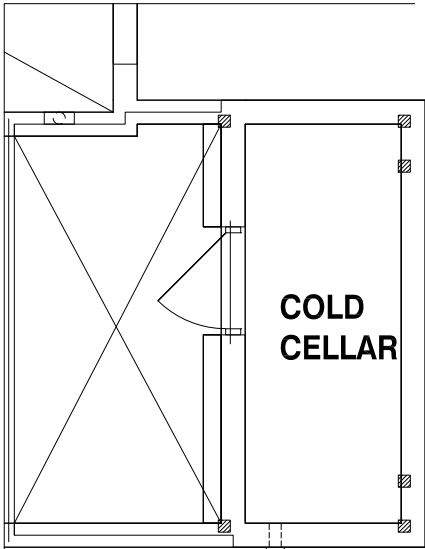
BASEMENT PLAN EL-1



PARTIAL BASEMENT LAYOUT
FOR DECK CONDITION EL-1,2,3



BASEMENT PLAN EL-2



BASEMENT PLAN EL-3

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.

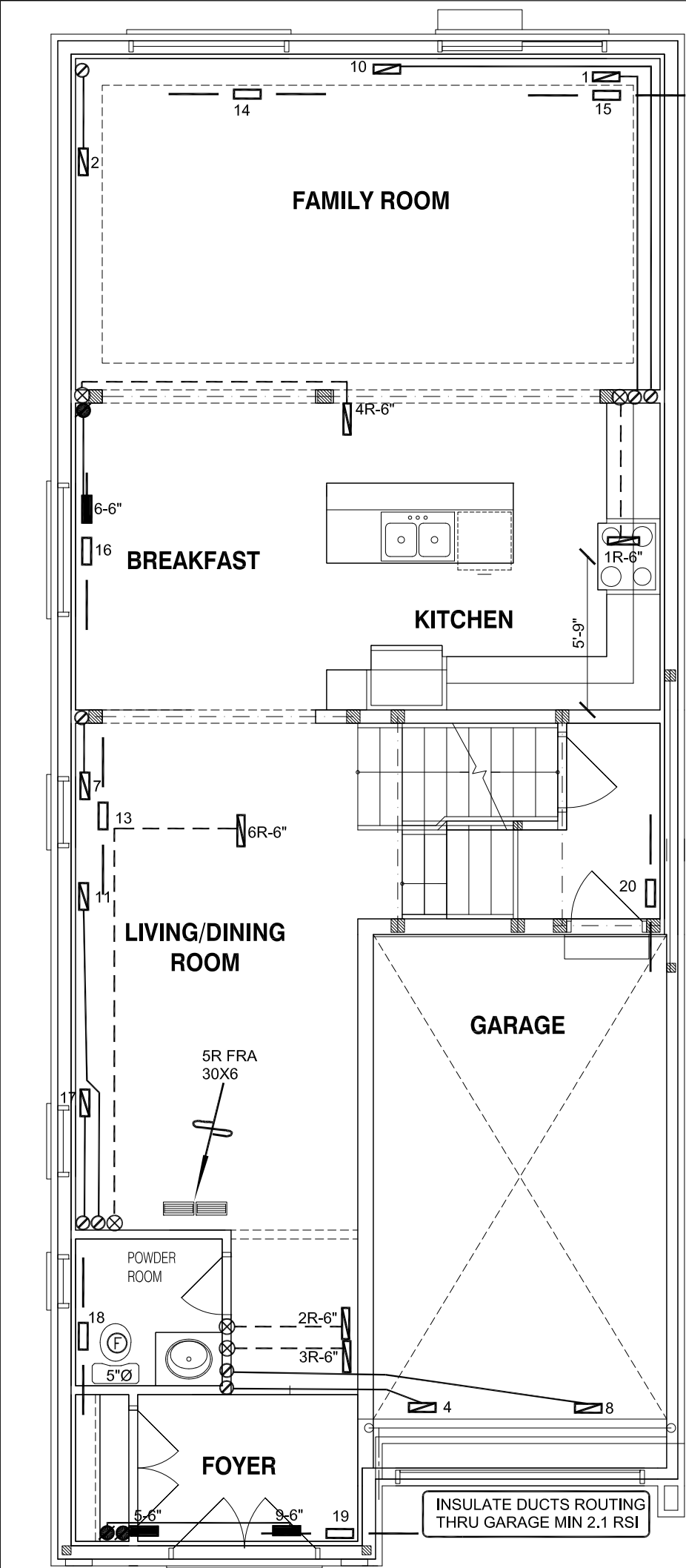
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

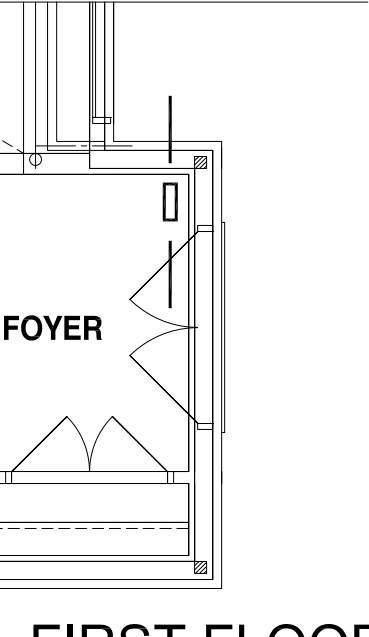
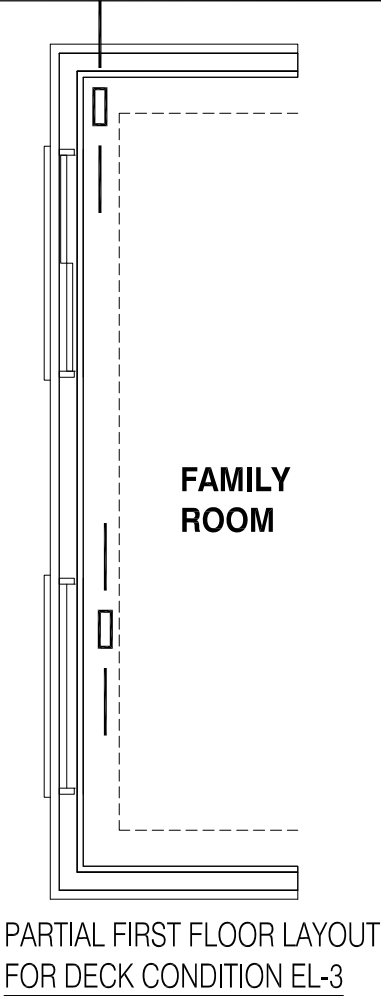
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR 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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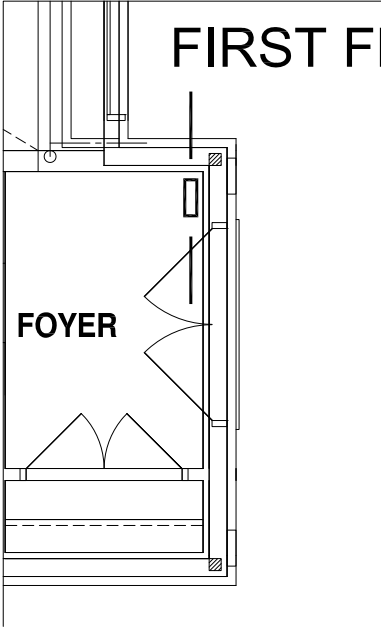
Client		HVACDESIGNS LTD. 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply 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 45211 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title	
Project Name BARLASSINA CAMBRIDGE, ONTARIO Garden 3 - Elevation 3 OPT 4 BED GARDEN 3 2415 sqft			MAKE GOODMAN	3RD FLOOR				BASEMENT HEATING LAYOUT	
			MODEL GMEC960603BNA	2ND FLOOR	11	5	3		
			INPUT 60 MBTU/H	1ST FLOOR	7	1	2		
			OUTPUT 57.6 MBTU/H	BASEMENT	4	1	0	Date	JAN/2023
			COOLING 2.0 TONS	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					Scale
FAN SPEED 928 cfm @ 0.6" w.c.						BCIN# 19669			
								LO#	99995



FIRST FLOOR PLAN EL-1



FIRST FLOOR PLAN EL-2



FIRST FLOOR PLAN EL-3

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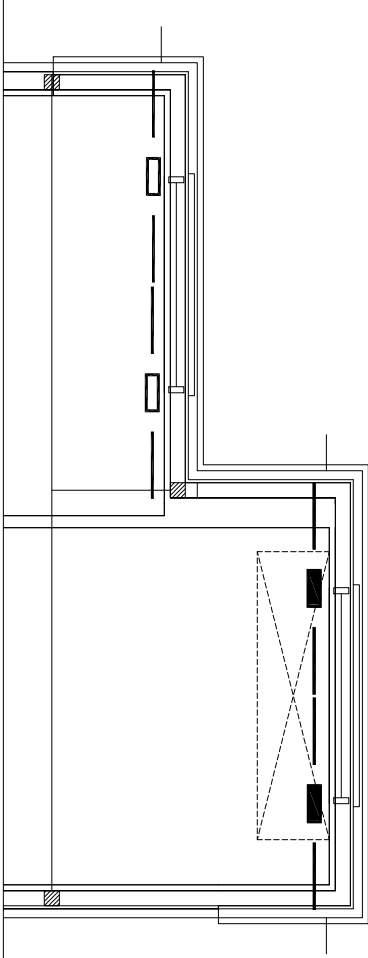
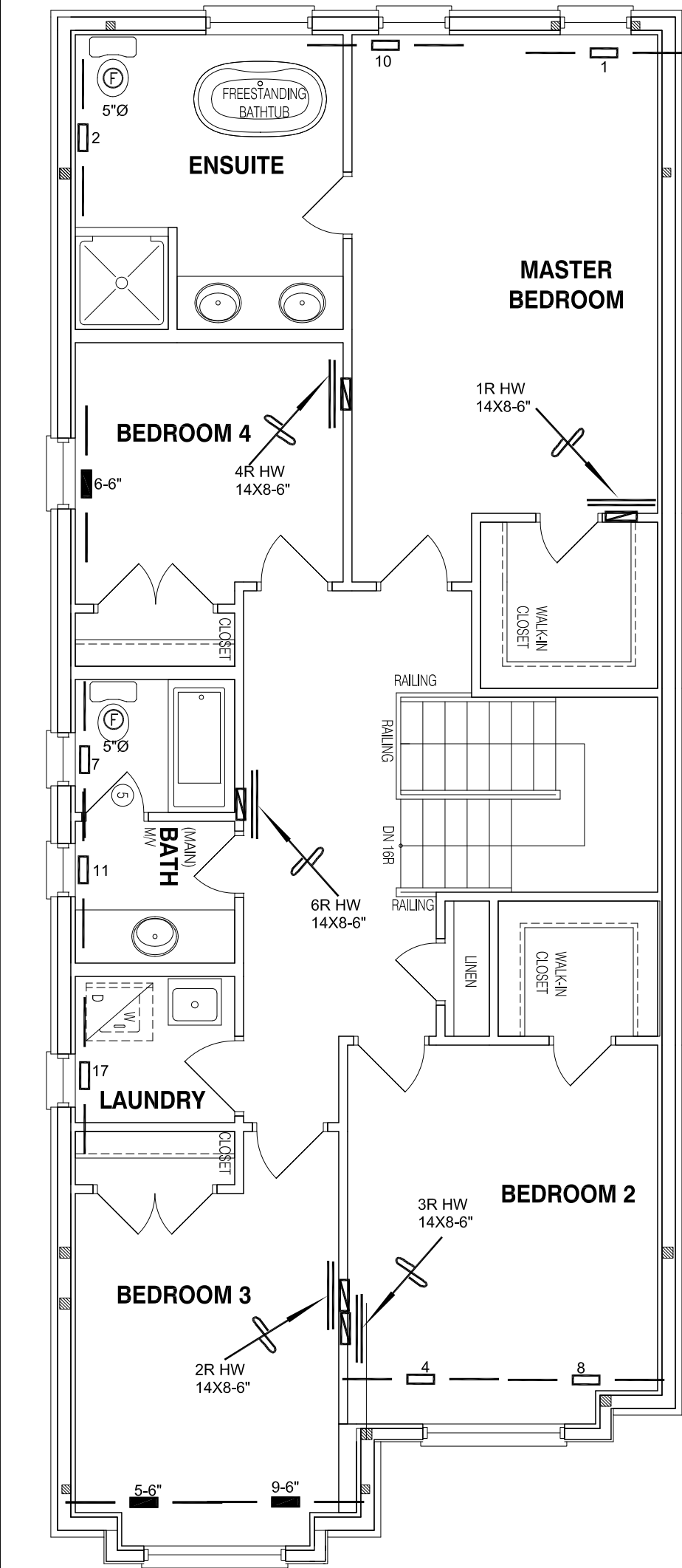
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

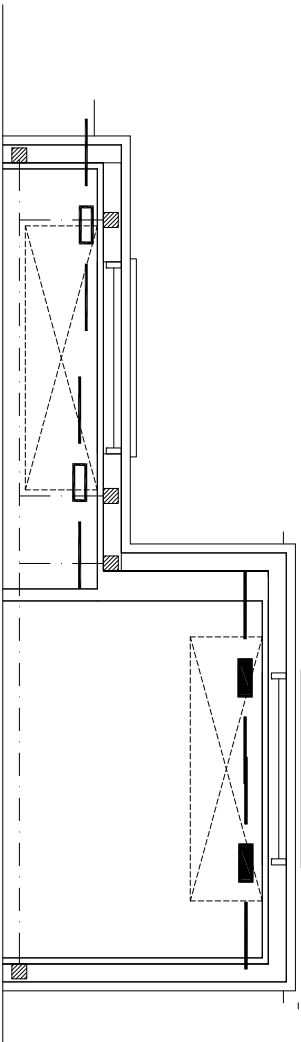
HVAC LEGEND								3.		
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Client		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title	
GREENPARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name		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.	Date	JAN/2023
BARLASSINA CAMBRIDGE, ONTARIO Garden 3 - Elevation 3 OPT 4 BED GARDEN 3			Scale	3/16" = 1'-0"
			BCIN# 19669	
			LO#	99995



SECOND FLOOR PLAN EL-2



SECOND FLOOR PLAN EL-3

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

CSA-F280-12
PACKAGE A1

HVAC LEGEND								3.		
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GREENPARK HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	JAN/2023
BARLASSINA CAMBRIDGE, ONTARIO			Scale	3/16" = 1'-0"
Garden 3 - Elevation 3			BCIN# 19669	
OPT 4 BED GARDEN 3		LO#	99995	
2415 sqft				