

SITE NAME: SECONDO

DATE: Jul-18

WINTER NATURAL AIR CHANGE RATE 0.227

HEAT LOSS AT °F. 81

CSA-F280-12

BUILDER: GREENPARK HOMES

TYPE: NEWBERRY 6A

GFA: 2965

LO# 76864

SUMMER NATURAL AIR CHANGE RATE 0.070

HEAT GAIN AT °F. 14

ENERGYSTAR

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	LOSS	GAIN	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	WIC-2	ENS-3	ENS-4	WIC-3	
						33	25	11	29	32	19	10	8	12	8	0	
						9	9	9	11	11	9	9	9	9	9	9	
GRS.WALL AREA	LOSS	GAIN				297	225	99	319	352	171	90	72	108	72	0	
GLAZING	LOSS	GAIN				LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	
NORTH	20.4	15.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EAST	20.4	41.5	0	0	0	0	0	0	44	895	1825	40	814	1659	0	0	0
SOUTH	20.4	24.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST	20.4	41.5	32	651	1327	14	285	581	0	0	0	0	0	0	9	183	223
SKYLT.	34.2	101.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	27.0	4.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	5.4	0.9	265	1427	245	211	1136	195	99	533	92	275	1481	255	312	1680	289
NET EXPOSED BSMT WALL ABOVE GR	3.9	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.6	0.7	272	437	193	144	231	102	143	229	101	188	302	133	159	255	113
NO ATTIC EXPOSED CLG	4.0	1.8	0	0	0	0	0	0	0	0	0	29	115	51	54	214	95
EXPOSED FLOOR	3.3	0.6	40	132	23	0	0	0	0	0	0	225	745	128	80	265	46
BASEMENT/CRAWL HEAT LOSS																	
SLAB ON GRADE HEAT LOSS																	
SUBTOTAL HT LOSS			2647			1652		763	3538	3228	1796	677	597	851	689	187	
SUB TOTAL HT GAIN				1788			878			2392			1098			355	50
LEVEL FACTOR / MULTIPLIER	0.20	0.16				0.20	0.16		0.20	0.16		0.20	0.16		0.20	0.16	
AIR CHANGE HEAT LOSS			419			261		121	560	511	284	107	95	135	109	30	
AIR CHANGE HEAT GAIN				148		72		16		197	182	91	14	10	31	29	4
DUCT LOSS			307			0		0	410	374	0	0	69	0	0	22	
DUCT GAIN				325		0		0		366	345	0	13	0	0	5	
HEAT GAIN PEOPLE	240		2	480		0		0	1	240	1	240	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS				832		0		0		832	832	0	0	0	0	0	0
TOTAL HT LOSS BTU/H			3373			1914		883	4508	4113	2080	784	761	986	798	238	
TOTAL HT GAIN x 1.3 BTU/H			4644			1236		272	5235	4940	2939	237	191	527	500	78	

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	LOSS	GAIN	LIV/DIN	FAM	KIT		LAUN		FOY	MUD				BAS
						32	45	29		7		57	26				192
						10	10	10		10		10	12				9
GRS.WALL AREA	LOSS	GAIN				320	450	290		70		570	312				1152
GLAZING	LOSS	GAIN				LOSS	LOSS	LOSS		LOSS		LOSS	LOSS				LOSS
NORTH	20.4	15.9	0	0	0	0	0	0		0		0	0				0
EAST	20.4	41.5	0	0	0	0	0	0		0		0	0				0
SOUTH	20.4	24.8	46	936	1141	0	0	0		0		0	0				8
WEST	20.4	41.5	0	0	0	42	855	1742		0		0	0				4
SKYLT.	34.2	101.2	0	0	0	0	0	0		0		0	0				0
DOORS	27.0	4.7	0	0	0	0	0	0		0		0	0				0
NET EXPOSED WALL	5.4	0.9	274	1475	254	408	2197	378		70		523	2816	484	292	1572	270
NET EXPOSED BSMT WALL ABOVE GR	3.9	0.7	0	0	0	0	0	0		0		0	0				576
EXPOSED CLG	1.6	0.7	0	0	0	0	0	0		91		0	0				0
NO ATTIC EXPOSED CLG	4.0	1.8	0	0	0	0	0	0		0		0	0				0
EXPOSED FLOOR	3.3	0.6	0	0	0	0	0	0		0		0	0				0
BASEMENT/CRAWL HEAT LOSS																	
SLAB ON GRADE HEAT LOSS																	6760
SUBTOTAL HT LOSS			2412			3052		2081		523		4087	2113				10306
SUB TOTAL HT GAIN				1395			2120		358		129		703		363		932
LEVEL FACTOR / MULTIPLIER	0.30	0.28				0.30	0.28		0.30	0.28		0.30	0.28		0.30	0.28	0.50
AIR CHANGE HEAT LOSS			667			844		576		145		1131	585				6578
AIR CHANGE HEAT GAIN				115		175		30		11		58	30				77
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				832		832		832		832		0	0				832
TOTAL HT LOSS BTU/H			3079			3896		2657		668		5218	2698				16884
TOTAL HT GAIN x 1.3 BTU/H			3045			4064		1585		1264		989	511				2394

TOTAL HEAT GAIN BTU/H: 35238

TONS: 2.94

LOSS DUE TO VENTILATION LOAD BTU/H: 3407

STRUCTURAL HEAT LOSS: 55537

TOTAL COMBINED HEAT LOSS BTU/H: 58943



SITE NAME: SECONDO

BUILDER: GREENPARK HOMES

TYPE: NEWBERRY 6A

DATE: Jul-18

GFA: 2965

LO# 76864

HEATING CFM 1122 COOLING CFM 1122
TOTAL HEAT LOSS 55,537 TOTAL HEAT GAIN 34,653
AIR FLOW RATE CFM 20.2 AIR FLOW RATE CFM 32.38

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

#GOODMAN
GMEC960803BNA 80

AFUE = 96 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = 76,800

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	14	7	4
R/A	0	0	5	2	1

plenium 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

FAN SPEED
LOW
MEDLOW
MEDIUM
MEDIUM HIGH
HIGH 1122

DESIGN CFM = 1122
CFM @ .6" E.S.P.

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	16	17	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	WIC-2	ENS-3	MBR	ENS-4	LIV/DIN	FAM	KIT	FAM	LAUN	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.69	1.91	0.88	2.25	2.06	2.08	0.78	0.76	0.99	1.69	0.80	3.08	1.95	2.66	1.95	0.67	5.22	2.70	4.22	4.22	4.22	4.22
CFM PER RUN HEAT	34	39	18	46	42	42	16	15	20	34	16	62	39	54	39	13	105	54	85	85	85	85
RM GAIN MBH.	2.32	1.24	0.27	2.62	2.47	2.94	0.24	0.19	0.53	2.32	0.50	3.05	2.03	1.59	2.03	1.26	0.99	0.51	0.60	0.60	0.60	0.60
CFM PER RUN COOLING	75	40	9	85	80	95	8	6	17	75	16	99	66	51	66	41	32	17	19	19	19	19
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	61	59	75	46	54	67	16	46	38	55	56	25	48	39	38	32	36	10	38	43	24	31
EQUIVALENT LENGTH	160	160	140	170	140	160	140	200	180	160	130	80	130	110	170	150	120	190	140	120	90	130
TOTAL EFFECTIVE LENGTH	221	219	215	216	194	227	156	246	218	215	186	105	178	149	208	182	156	200	178	163	114	161
ADJUSTED PRESSURE	0.08	0.08	0.08	0.08	0.09	0.07	0.11	0.07	0.08	0.08	0.09	0.15	0.1	0.12	0.08	0.09	0.1	0.09	0.09	0.1	0.14	0.1
ROUND DUCT SIZE	5	4	4	6	5	6	4	4	4	5	4	5	5	4	5	4	6	5	5	5	5	5
HEATING VELOCITY (ft/min)	250	447	207	235	308	214	184	172	229	250	184	455	286	620	286	149	535	396	624	624	624	624
COOLING VELOCITY (ft/min)	551	459	103	433	587	484	92	69	195	551	184	727	485	585	485	470	163	125	140	140	140	140
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10
TRUNK	B	A	A	D	D	A	C	D	D	B	A	C	A	B	A	C	D	D	B	A	C	D

RUN #	25	26	27
ROOM NAME	BED-2	BED-3	WIC-3
RM LOSS MBH.	2.25	2.06	0.24
CFM PER RUN HEAT	46	42	5
RM GAIN MBH.	2.62	2.47	0.08
CFM PER RUN COOLING	85	80	3
ADJUSTED PRESSURE	0.16	0.17	0.17
ACTUAL DUCT LGH.	49	58	34
EQUIVALENT LENGTH	170	180	220
TOTAL EFFECTIVE LENGTH	219	238	254
ADJUSTED PRESSURE	0.07	0.07	0.07
ROUND DUCT SIZE	6	6	4
HEATING VELOCITY (ft/min)	235	214	57
COOLING VELOCITY (ft/min)	433	408	34
OUTLET GRILL SIZE	4X10	4X10	3X10
TRUNK	D	D	D

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	278	0.07	9	10	x 8	500	TRUNK G	0	0.00	0	0 x 8 0
TRUNK B	207	0.08	7.8	8	x 8	466	TRUNK H	0	0.00	0	0 x 8 0
TRUNK C	661	0.07	12.4	18	x 8	661	TRUNK I	0	0.00	0	0 x 8 0
TRUNK D	460	0.07	10.8	14	x 8	591	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	STATIC	ROUND	RECT	VELOCITY		
	CFM	PRESS.	DUCT	DUCT			(ft/min)
TRUNK O	0	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	932	0.06	14.7	30	x	8	559
TRUNK Y	405	0.06	10.7	14	x	8	521
TRUNK Z	0	0.06	0	0	x	8	0
DROP	1122	0.06	15.7	24	x	10	673

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	0	0	0	0	0	0	0	0	0	0
AIR VOLUME	85	95	95	85	320	135	155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	152
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	0.15
ACTUAL DUCT LGH.	76	52	49	34	47	12	35	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	141
EQUIVALENT LENGTH	190	135	120	140	185	135	175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	266	187	169	174	232	147	210	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.06	0.08	0.09	0.09	0.06	0.10	0.07	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	0.10
ROUND DUCT SIZE	6	5.8	5.6	5.4	9.8	6.3	7.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.5
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	8
	X	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	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14

TYPE: NEWBERRY 6A
SITE NAME: SECONDO

LO # 76864

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>6</u> @ 10.6 cfm	<u>63.6</u> cfm
Other Rooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Table 9.32.3.A.	TOTAL	<u>180.2</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>180.2</u>	cfm
Less Principal Ventil. Capacity	<u>155</u>	cfm
Required Supplemental Capacity	<u>25.2</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model:	VANEE 65H
Location:	BSMT
<u>155.0</u> cfm	<u>3.0</u> sones
☒ HVI Approved	

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
155.0 CFM	X 81 F	X 1.08	X	0.25

SUPPLEMENTAL FANS		NUTONE		
Location	Model	cfm	HVI	Sones
ENS	QTXEN050C	50	☒	0.3
ENS-2	QTXEN050C	50	☒	0.3
ENS-4	QTXEN050C	50	☒	0.3

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	VANEE 65H	
<u>155</u> cfm high	<u>64</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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	July-18

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 76864	Model: NEWBERRY 6A	Builder: GREENPARK HOMES	Date: 7/30/2018																																																									
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>1314</td> <td>9</td> <td>11826</td> </tr> <tr> <td>First</td> <td>1314</td> <td>10</td> <td>13140</td> </tr> <tr> <td>Second</td> <td>1651</td> <td>9</td> <td>14859</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>39,825.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>1127.7 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1314	9	11826	First	1314	10	13140	Second	1651	9	14859	Third	0	9	0	Fourth	0	9	0	Total:			39,825.0 ft³	Total:			1127.7 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%; text-align: center;">0.227</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.070</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>-23</td> <td>45</td> <td>81</td> </tr> <tr> <td>Summer DTDc</td> <td>22</td> <td>30</td> <td>8</td> <td>14</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.227	SUMMER NATURAL AIR CHANGE RATE	0.070	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-23	45	81	Summer DTDc	22	30	8	14
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																									
Bsmt	1314	9	11826																																																									
First	1314	10	13140																																																									
Second	1651	9	14859																																																									
Third	0	9	0																																																									
Fourth	0	9	0																																																									
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Summer DTDc	22	30	8	14																																																								
5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.227 x 313.26 x 45 °C x 1.2 = 3856 W = 13156 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.070 x 313.26 x 8 °C x 1.2 = 206 W = 703 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 155 CFM x 81 °F x 1.08 x 0.25 = 3407 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 155 CFM x 14 °F x 1.08 x 0.25 = 586 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 _{level})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																								
1	0.5	13,156	10,306	0.638																																																								
2	0.3		14,268	0.277																																																								
3	0.2		16,626	0.158																																																								
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																																																												

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** NEWBERRY 6A**BUILDER:** GREENPARK HOMES**SFQT:** 2965**LO#** 76864**SITE:** SECONDO**DESIGN ASSUMPTIONS**

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-9	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	72

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	39825.0	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:	6.0 ft
LENGTH: 70.0 ft	WIDTH: 26.0 ft	EXPOSED PERIMETER:	192.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component****Compliance Package
ENERGYSTAR****Nominal Min. Eff.**

Ceiling with Attic Space Minimum RSI (R)-Value	50	50.72
Ceiling Without Attic Space Minimum RSI (R)-Value	31	20.54
Exposed Floor Minimum RSI (R)-Value	31	24.58
Walls Above Grade Minimum RSI (R)-Value	20 + 5	15.12
Basement Walls Minimum RSI (R)-Value	20	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	ZONE 2	-
Skylights Maximum U-Value	ZONE 2	-
Space Heating Equipment Minimum AFUE	0.95	-
HRV Minimum Efficiency	65%	-
Domestic Hot Water Heater Minimum EF	0.75	-

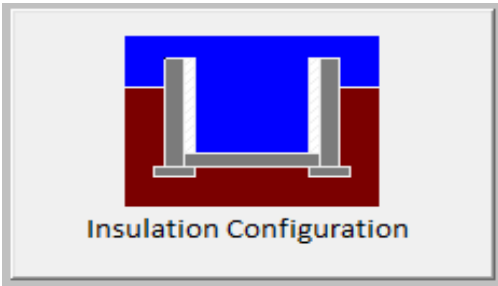
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Bradford	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	21.3	 Insulation Configuration
Floor Width (m):	7.9	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.1	
Door Area (m ²):	3.7	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1981

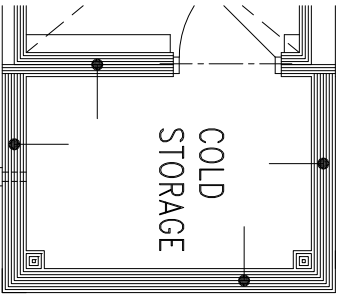
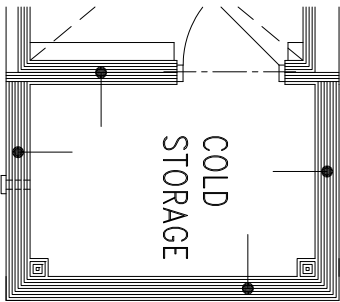
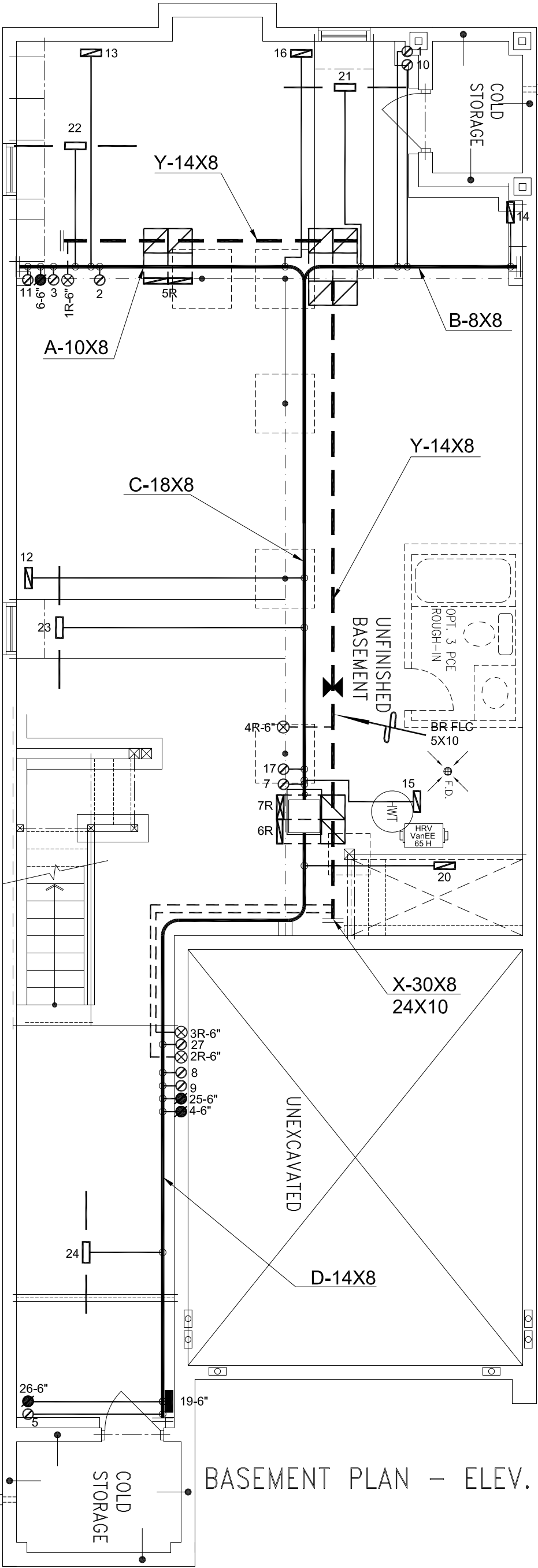
TYPE: NEWBERRY 6A
LO# 76864

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Bradford			
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):	6.71			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1127.7			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.		1052.7 cm ²	
	2.50		ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply		Total Exhaust	
	73.2		73.2	
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.227			
Cooling Air Leakage Rate (ACH/H):	0.070			

TYPE: NEWBERRY 6A
LO# 76864



I/MICHAEL OROURKE 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.

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	FLOOR 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

3.	2.
REVISED WINDOWS	JULY/2018
REVISED TO GRADE CONDITIONS	1.
Description	Date

REVISIONS
1.
Date

BASEMENT PLAN – ELEV. 2

BASEMENT PLAN – ELEV. 3

BASEMENT PLAN – ELEV. 1

Client

GREENPARK HOMES

Project Name

SECONDO
EAST GWILLIMBURY,
ONTARIO

NEWBERRY 6A 2965 sqft

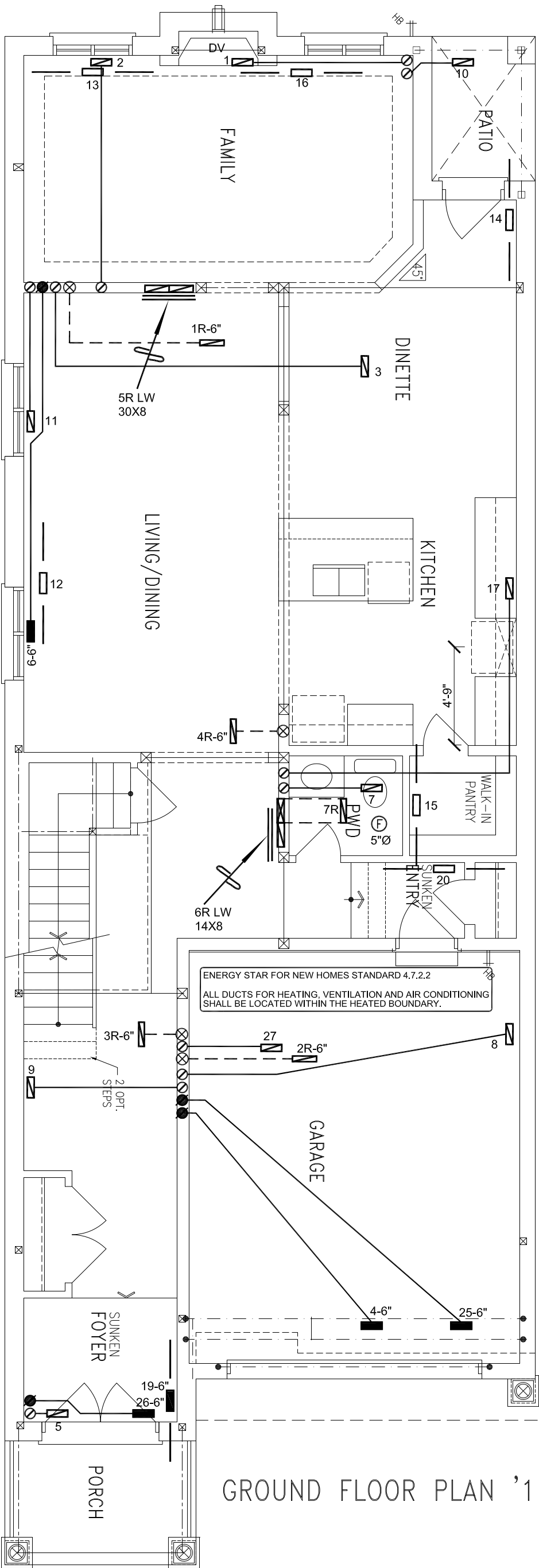
HVACDESIGNS LTD.

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

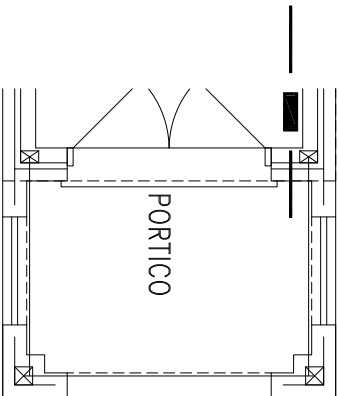
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

HEAT LOSS 58943 BTU/H UNIT DATA		# OF RUNS	S/A	R/A	FANS
MAKE	GOODMAN	3RD FLOOR			
MODEL	GMEC960803BNA	2ND FLOOR	14	5	5
INPUT	80 MBTU/H	1ST FLOOR	7	2	2
OUTPUT	76.8 MBTU/H	BASEMENT	4	1	0
COOLING	3.0 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			
FAN SPEED	1080 cfm @ 0.6" w.c.				

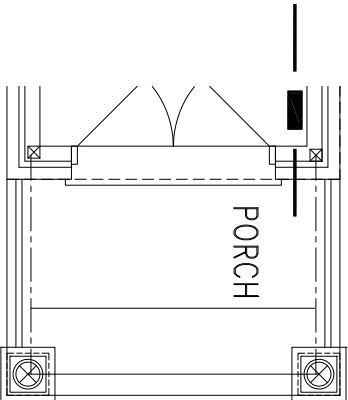
Sheet Title	
BASEMENT HEATING LAYOUT	
Date	NOV/2017
Scale	3/16" = 1'-0"
BCIN# 19669	
LO#	76864



GROUND FLOOR PLAN '1'



GROUND FLOOR PLAN '2'



GROUND FLOOR PLAN '3'

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

HVAC LEGEND					
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
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	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA-FLOOR RETURN AIR GRILLE

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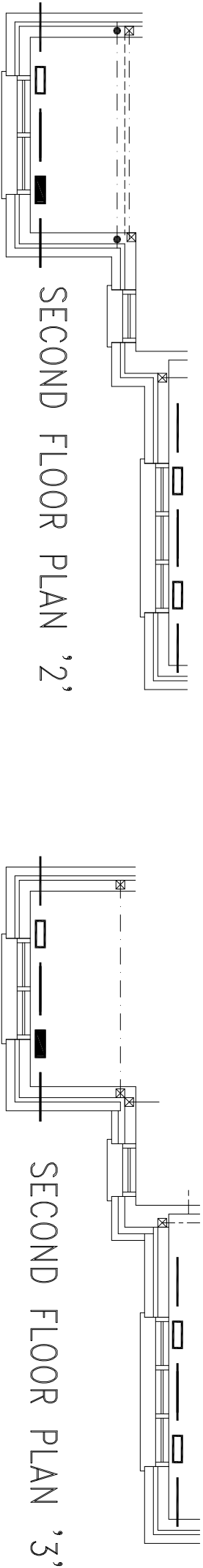
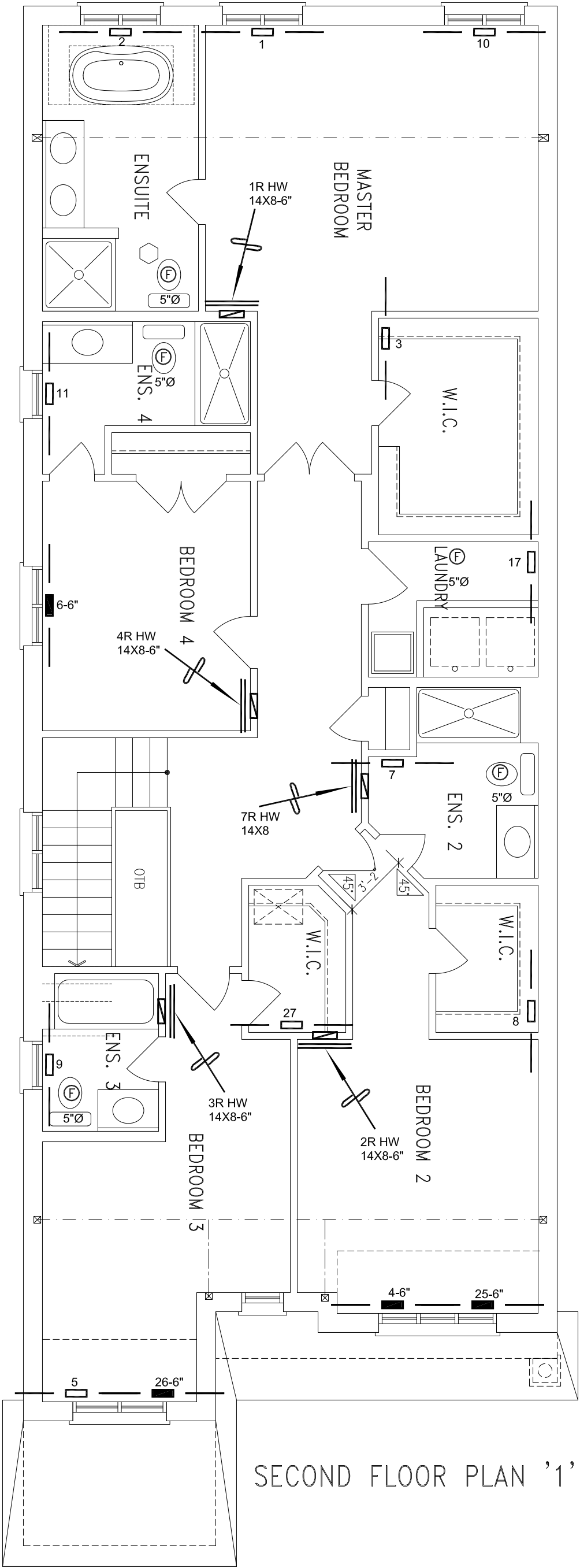


Client	GREENPARK HOMES
Project Name	SECONDO EAST GWILLIMBURY, ONTARIO
	NEWBERRY 6A 2965 sqft

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.

Sheet Title	FIRST FLOOR HEATING LAYOUT
Date	NOV/2017
Scale	3/16" = 1'-0"
	BCIN# 19669
LO#	76864



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CSA-F280-12

ENERGY STAR

Client	GREENPARK HOMES
Project Name	SECONDO EAST GWILLIMBURY, ONTARIO
	NEWBERRY 6A 2965 sqft

375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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Sheet Title	SECOND FLOOR HEATING LAYOUT
Date	NOV/2017
Scale	3/16" = 1'-0"
	BCIN# 19669
LO#	76864