

SITE NAME: SECONDO

BUILDER: GREENPARK HOMES

TYPE: NEWBERRY 2A

GFA: 2288

DATE: Jul-18

LO# 76863

WINTER NATURAL AIR CHANGE RATE 0.227

SUMMER NATURAL AIR CHANGE RATE 0.070

HEAT LOSS ΔT °F. 81

HEAT GAIN ΔT °F. 14

CSA-F280-12

ENERGYSTAR

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	LOSS	GAIN	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH					
GRS.WALL AREA						34	26	6	25	34	19	8					
GLAZING						9	9	9	9	10	9	9					
NORTH	20.4	15.9	0	0	0	0	0	0	0	0	0	0	9	183	143		
EAST	20.4	41.5	0	0	0	0	0	0	23	468	954	41	834	1700	0	0	0
SOUTH	20.4	24.8	0	0	0	0	0	0	0	0	0	0	26	529	645	0	0
WEST	20.4	41.5	32	651	1327	14	285	581	0	0	0	0	0	0	0	0	0
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	274	1475	254	220	1185	204	54	291	50	202	1088	187	299	1610	277
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	288	462	204	144	231	102	66	106	47	165	265	117	160	257	114
NO ATTIC EXPOSED CLG	4.0	1.8	0	0	0	0	0	0	0	0	0	48	190	84	0	0	0
EXPOSED FLOOR	3.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	33	109	19
BASEMENT/CRAWL HEAT LOSS																	
SLAB ON GRADE HEAT LOSS																	
SUBTOTAL HT LOSS			2589			1701		397	2367	2891	1676		773				
SUB TOTAL HT GAIN				1785		887		97	1352	2175	941		283				
LEVEL FACTOR / MULTIPLIER	0.20	0.17				0.20	0.17		0.20	0.17		0.20	0.17		0.20	0.17	
AIR CHANGE HEAT LOSS			437			287		67	399	488	283		130				
AIR CHANGE HEAT GAIN				141		70		8	107	172	74		22				
DUCT LOSS			0			0		0	277	0	0		90				
DUCT GAIN			0			0		0	234	0	0		30				
HEAT GAIN PEOPLE	240	2	480			0		0	1	240	1	240	0				
HEAT GAIN APPLIANCES/LIGHTS			636			0		0	636	636	636		0				
TOTAL HT LOSS BTU/H			3026			1988		464	3043	3379	1959		994				
TOTAL HT GAIN x 1.3 BTU/H			3955			1244		136	3339	4190	2460		436				

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	LOSS	GAIN	LIV/DIN	KIT/FM	LAUN	W/R	FOY							BAS
GRS.WALL AREA						31	81	22	3	30							166
GLAZING						10	10	11	11	11							9
NORTH	20.4	15.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
EAST	20.4	41.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	20.4	24.8	34	692	844	0	0	0	9	183	223	0	0	0	0	0	8
WEST	20.4	41.5	0	0	0	68	1384	2820	0	0	0	0	0	0	0	0	163
SKYLT.	34.2	101.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	199
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	276	1486	256	712	3834	659	20	541	93	0	0	0	46	1244	214
NET EXPOSED BSMT WALL ABOVE GR	3.9	0.7	0	0	0	0	0	0	222	1195	206	24	129	22	284	1529	263
EXPOSED CLG	1.6	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	4.0	1.8	0	0	0	68	269	119	16	63	28	0	0	0	22	87	39
EXPOSED FLOOR	3.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS																	
SLAB ON GRADE HEAT LOSS																	
SUBTOTAL HT LOSS			2178			6098		1800	312	2861							5839
SUB TOTAL HT GAIN				1099		4075		327	246	516							8544
LEVEL FACTOR / MULTIPLIER	0.30	0.24				0.30	0.24		0.30	0.24		0.30	0.24				0.50
AIR CHANGE HEAT LOSS			516			1443		426	74	677							0.61
AIR CHANGE HEAT GAIN				87		322		26	19	41							5226
DUCT LOSS			0			0		0	0	0							54
DUCT GAIN			0			0		0	0	0							0
HEAT GAIN PEOPLE	240	0	0			0		0	0	0		0					0
HEAT GAIN APPLIANCES/LIGHTS			636			636		636	0	0		0					636
TOTAL HT LOSS BTU/H			2694			7541		2226	386	3538							13770
TOTAL HT GAIN x 1.3 BTU/H			2369			6544		1285	344	723							1788

TOTAL HEAT GAIN BTU/H:

29400

TONS: 2.45

LOAD DUE TO VENTILATION LOAD BTU/H: 3407

STRUCTURAL HEAT LOSS: 45005

TOTAL COMBINED HEAT LOSS BTU/H: 48412

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BUILDER: GREENPARK HOMES

TYPE: NEWBERRY 2A

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LO# 76863

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 45,005 TOTAL HEAT GAIN 28,814
AIR FLOW RATE CFM 25.13 AIR FLOW RATE CFM 39.25

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

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

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	10	7	4
R/A	0	0	4	2	1

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

FAN SPEED
LOW
MEDLOW
MEDIUM
MEDIUM HIGH
HIGH 1131

DESIGN CFM = 1131
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	12	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-2	BED-3	MBR	LIV/DIN	KIT/FM	KIT/FM	KIT/FM	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.51	1.99	0.46	1.52	1.69	1.96	0.99	1.52	1.69	1.51	2.69	2.51	2.51	2.51	2.23	0.39	3.54	3.44	3.44	3.44	3.44
CFM PER RUN HEAT	38	50	12	38	42	49	25	38	42	38	68	63	63	63	56	10	89	87	87	87	87
RM GAIN MBH.	1.98	1.24	0.14	1.67	2.09	2.46	0.44	1.67	2.09	1.98	2.37	2.18	2.18	2.18	1.29	0.34	0.72	0.45	0.45	0.45	0.45
CFM PER RUN COOLING	78	49	5	66	82	97	17	66	82	78	93	86	86	86	50	14	28	18	18	18	18
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.16	0.17	0.16	0.16	0.16	0.16	0.17	0.17	0.16	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	68	61	38	44	50	38	34	48	54	50	23	50	42	45	27	28	28	45	67	25	24
EQUIVALENT LENGTH	160	150	150	160	160	210	170	180	170	170	160	100	140	130	150	160	90	120	140	120	150
TOTAL EFFECTIVE LENGTH	228	211	188	204	210	248	204	228	224	220	183	150	182	175	177	188	118	165	207	145	174
ADJUSTED PRESSURE	0.08	0.08	0.09	0.08	0.08	0.07	0.08	0.08	0.07	0.08	0.09	0.11	0.09	0.09	0.1	0.09	0.14	0.1	0.08	0.11	0.09
ROUND DUCT SIZE	5	5	4	5	5	6	4	5	6	5	6	5	5	5	5	4	5	5	6	5	5
HEATING VELOCITY (ft/min)	279	367	138	279	308	250	287	279	214	279	347	463	463	463	411	115	653	639	444	639	639
COOLING VELOCITY (ft/min)	573	360	57	485	602	495	195	485	418	573	474	631	631	631	367	161	206	132	92	132	132
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10
TRUNK	B	B	B	C	C	B	B	C	C	B	C	A	A	A	B	C	C	A	A	B	C

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	1.51	38	1.98	78	0.17	68	160	228	0.08	5	279	573	3X10	B
2	ENS	1.99	50	1.24	49	0.17	61	150	211	0.08	5	367	360	3X10	B
3	WIC	0.46	12	0.14	5	0.17	38	150	188	0.09	4	138	57	3X10	B
4	BED-2	1.52	38	1.67	66	0.17	44	160	204	0.08	5	279	485	3X10	C
5	BED-3	1.69	42	2.09	82	0.16	50	160	210	0.08	5	308	602	3X10	C
6	BED-4	1.96	49	2.46	97	0.16	38	210	248	0.07	6	250	495	4X10	B
7	BATH	0.99	25	0.44	17	0.17	34	170	204	0.08	4	287	195	3X10	B
8	BED-2	1.52	38	1.67	66	0.17	48	180	228	0.08	5	279	485	3X10	C
9	BED-3	1.69	42	2.09	82	0.16	54	170	224	0.07	6	214	418	4X10	C
10	MBR	1.51	38	1.98	78	0.17	50	170	220	0.08	5	279	573	3X10	B
12	LIV/DIN	2.69	68	2.37	93	0.16	23	160	183	0.09	6	347	474	4X10	C
14	KIT/FM	2.51	63	2.18	86	0.16	50	100	150	0.11	5	463	631	3X10	A
15	KIT/FM	2.51	63	2.18	86	0.16	42	140	182	0.09	5	463	631	3X10	A
16	KIT/FM	2.51	63	2.18	86	0.16	45	130	175	0.09	5	463	631	3X10	A
17	LAUN	2.23	56	1.29	50	0.17	27	150	177	0.1	5	411	367	3X10	B
18	W/R	0.39	10	0.34	14	0.17	28	160	188	0.09	4	115	161	3X10	C
19	FOY	3.54	89	0.72	28	0.16	28	90	118	0.14	5	653	206	3X10	C
21	BAS	3.44	87	0.45	18	0.16	45	120	165	0.1	5	639	132	3X10	A
22	BAS	3.44	87	0.45	18	0.16	67	140	207	0.08	6	444	92	4X10	A
23	BAS	3.44	87	0.45	18	0.16	25	120	145	0.11	5	639	132	3X10	B
24	BAS	3.44	87	0.45	18	0.16	24	150	174	0.09	5	639	132	3X10	C

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	363	0.08	9.6	10	x	8	653	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.06	0	0	x	8	0
TRUNK B	718	0.07	12.8	20	x	8	646	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.06	0	0	x	8	0
TRUNK C	414	0.07	10.4	12	x	8	621	TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.06	0	0	x	8	0
TRUNK D	1131	0.07	15.2	26	x	8	783	TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.06	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	0.06	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	0.06	0	0	x	8	0

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	12	14	15	16	17	18	19	21	22	23	24
AIR VOLUME	155	85	85	155	330	155	0	0	0	0	0	0	0	0	0	0	0	166	166	166	166
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
ACTUAL DUCT LGH.	51	51	61	65	38	18	1	1	1	1	1	1	1	1	1	1	1	14	14	14	14
EQUIVALENT LENGTH	185	180	135	120	190	180	0	0	0	0	0	0	0	0	0	0	0	135	135	135	135
TOTAL EFFECTIVE LH	236	231	196	185	228	198	1	1	1	1	1	1	1	1	1	1	1	149	149	149	149
ADJUSTED PRESSURE	0.06	0.06	0.08	0.08	0.06	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10	0.10	0.10	0.10
ROUND DUCT SIZE	7.5	6	5.6	7	9.9	7.2	0	0	0	0	0	0	0	0	0	0	0	6.8	6.8	6.8	6.8
INLET GRILL SIZE	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	8	8	8	8
INLET GRILL SIZE	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	14	14	14	14

TYPE: NEWBERRY 2A
SITE NAME: SECONDO

LO # 76863

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>155</u>	cfm
Required Supplemental Capacity	<u>4.0</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
BATH	QTXEN050C	50	☒	0.3
W/R	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#: 76863	Model: NEWBERRY 2A	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>1105</td> <td>9</td> <td>9945</td> </tr> <tr> <td>First</td> <td>1105</td> <td>10</td> <td>11050</td> </tr> <tr> <td>Second</td> <td>1183</td> <td>9</td> <td>10647</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>31,642.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>896.0 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1105	9	9945	First	1105	10	11050	Second	1183	9	10647	Third	0	9	0	Fourth	0	9	0	Total:			31,642.0 ft³	Total:			896.0 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 style="text-align: center;">22</td> <td style="text-align: center;">-23</td> <td style="text-align: center;">45</td> <td style="text-align: center;">81</td> </tr> <tr> <td>Summer DTDc</td> <td style="text-align: center;">22</td> <td style="text-align: center;">30</td> <td style="text-align: center;">8</td> <td style="text-align: center;">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	1105	9	9945																																																									
First	1105	10	11050																																																									
Second	1183	9	10647																																																									
Third	0	9	0																																																									
Fourth	0	9	0																																																									
Total:			31,642.0 ft³																																																									
Total:			896.0 m³																																																									
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																																																								
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 248.89 x 45 °C x 1.2 = 3064 W = 10453 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ 0.070 x 248.89 x 8 °C x 1.2 = 164 W = 559 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 _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																								
1	0.5	10,453	8,544	0.612																																																								
2	0.3		13,249	0.237																																																								
3	0.2		12,393	0.169																																																								
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 2A	BUILDER: GREENPARK HOMES
SFQT: 2288	SITE: SECONDO
LO# 76863	

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):	31642.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 57.0 ft	WIDTH: 26.0 ft	EXPOSED PERIMETER:	166.0 ft

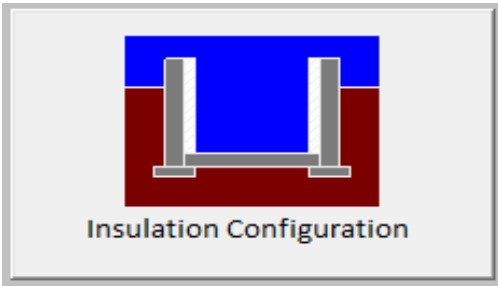
2012 OBC - COMPLIANCE PACKAGE		Compliance Package ENERGYSTAR	
Component		Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value		50	50.72
Ceiling Without Attic Space Minimum RSI (R)-Value		31	20.54
Exposed Floor Minimum RSI (R)-Value		31	24.58
Walls Above Grade Minimum RSI (R)-Value		20 + 5	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):	17.4	 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):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1711

TYPE: NEWBERRY 2A
LO# 76863

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

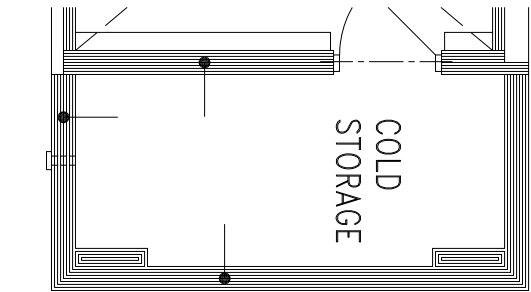
Weather Station Description				
Province:	Ontario			
Region:	Bradford			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.71			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	896.0			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	836.4 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 2A

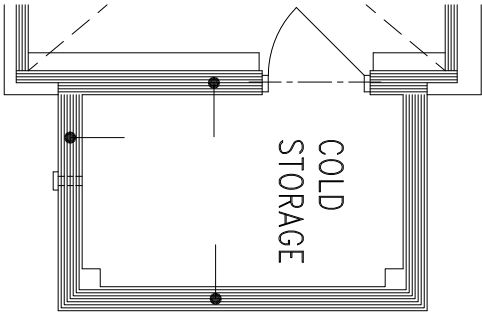
LO# 76863

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.

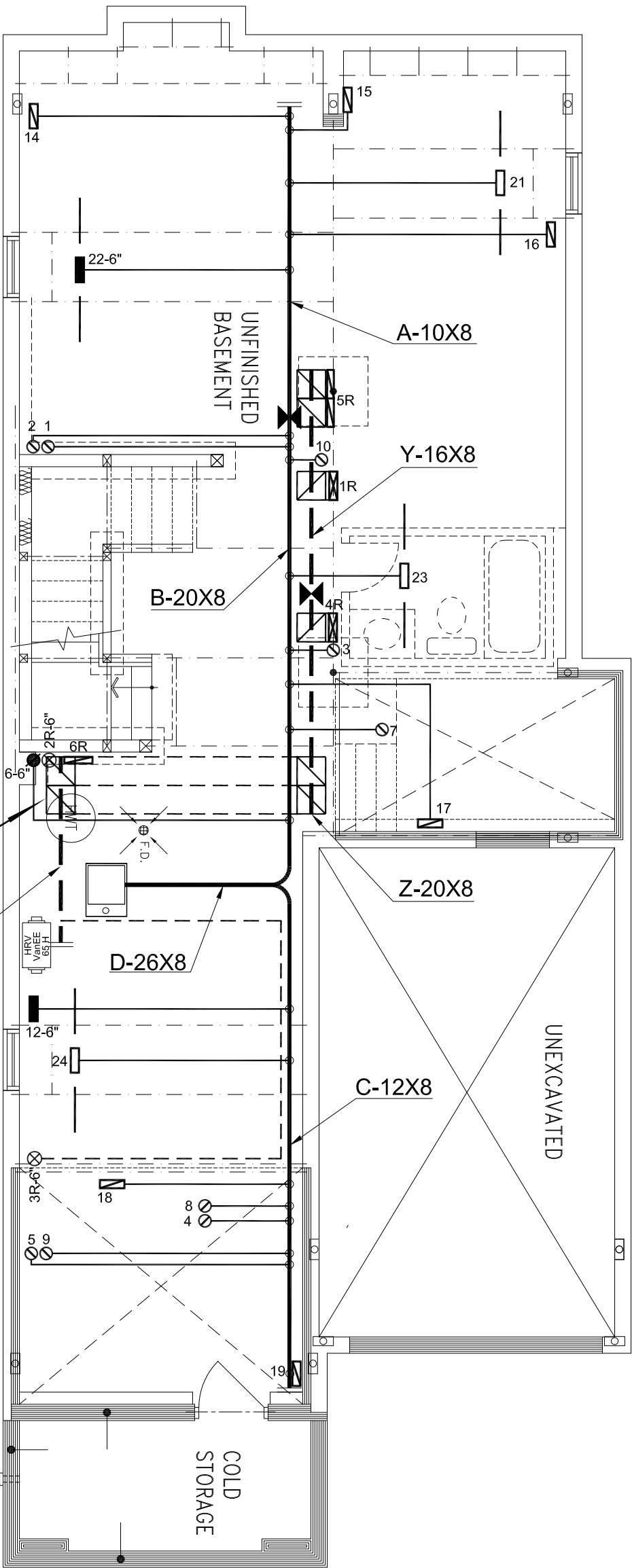
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.



BASEMENT PLAN – ELEV. 3



BASEMENT PLAN – ELEV. 2



BASEMENT PLAN – ELEV. 1

CSA-F280-12

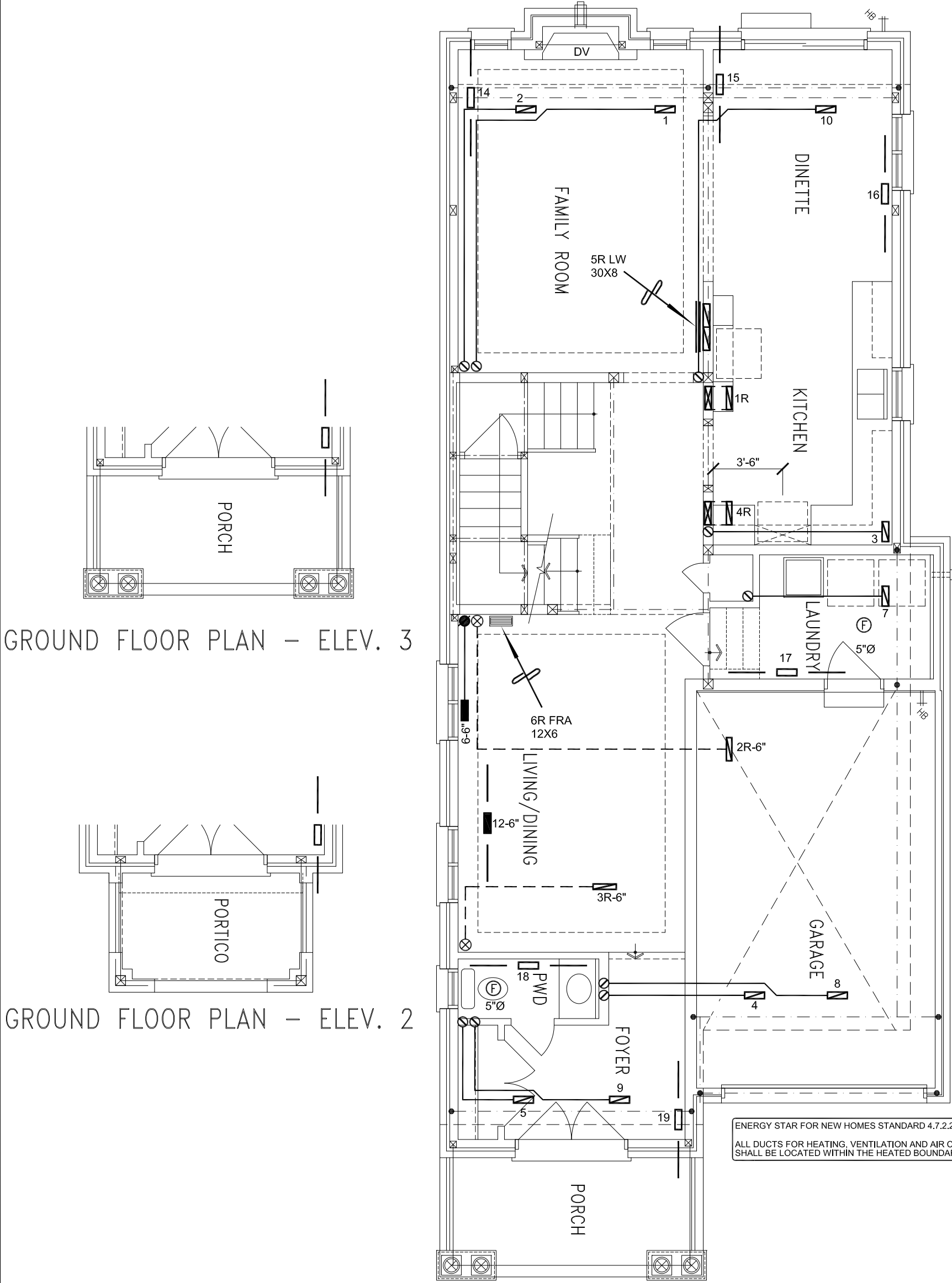


ENERGY STAR

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR 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.

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 48412 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title	
GREENPARK HOMES			MAKE GOODMAN	3RD FLOOR				BASEMENT HEATING LAYOUT	
Project Name SECONDO EAST GWILLIMBURY			MODEL GMEC960603BNA	2ND FLOOR	10	4	2		
			INPUT 60 MBTU/H	1ST FLOOR	7	2	3		
NEWBERRY 2A 2288 sqft			OUTPUT 57.6 MBTU/H	BASEMENT	4	1	0	Date	NOV/2017
		COOLING 2.5 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	3/16" = 1'-0"	
		FAN SPEED 1131 cfm @ 0.6" w.c.					BCIN# 19669		
							LO#	76863	



GROUND FLOOR PLAN – ELEV. 3

GROUND FLOOR PLAN – ELEV. 2

GROUND FLOOR PLAN – ELEV. 1

ENERGY STAR FOR NEW HOMES STANDARD 4.7.2.2
ALL DUCTS FOR HEATING, VENTILATION AND AIR CONDITIONING
SHALL BE LOCATED WITHIN THE HEATED BOUNDARY.

I MICHAEL O'ROURKE HAVE REVIEW
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

ENERGY STAR

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR 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

GREENPARK HOMES

Project Name

SECONDO
EAST GWILLIMBURY

NEWBERRY 2A 2288 sqft

375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdsgns.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

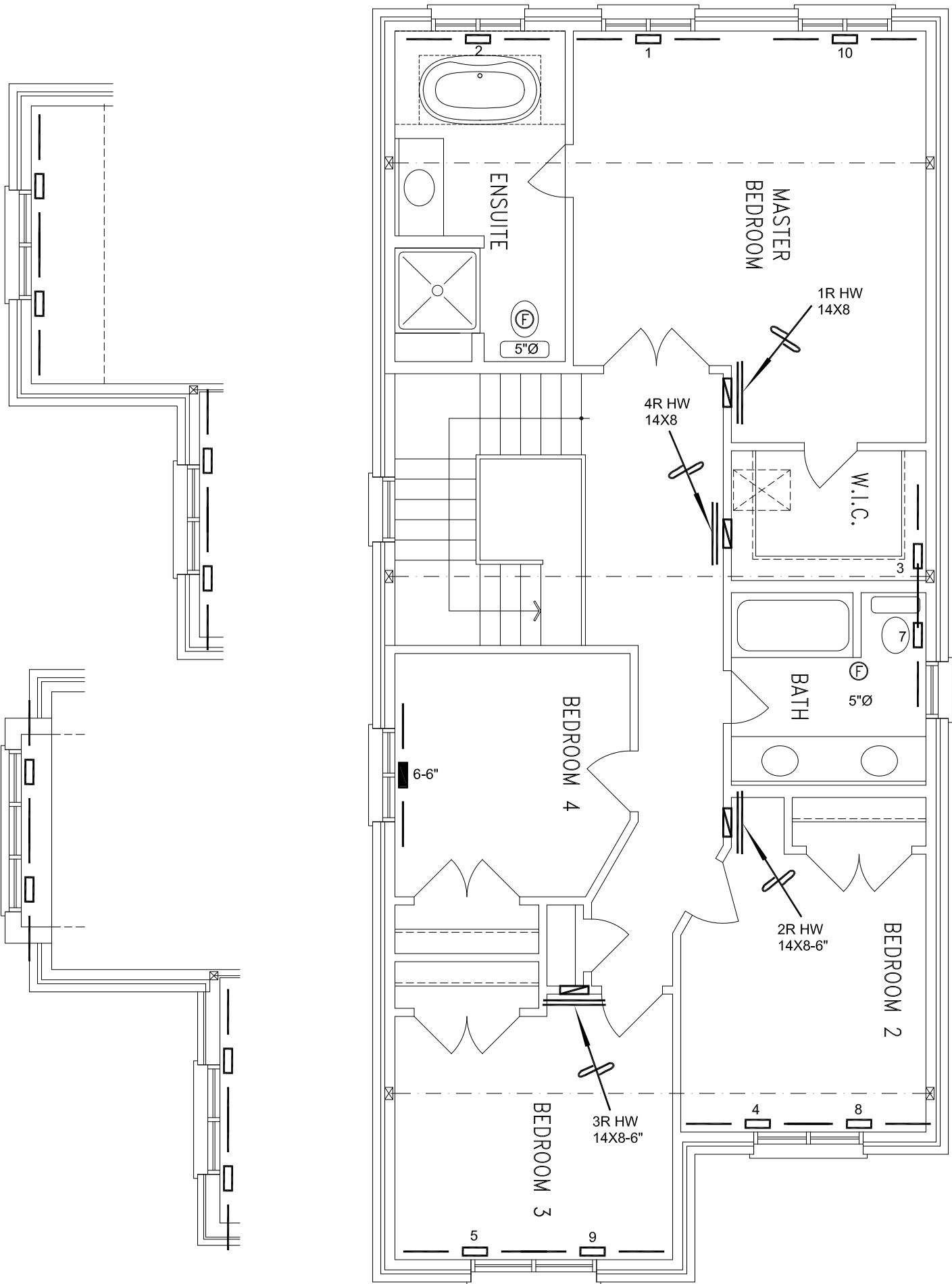
3/16" = 1'-0"

BCIN# 19669

LO# 76863

SECOND FLOOR PLAN – ELEV. 3

SECOND FLOOR PLAN – ELEV. 2



SECOND FLOOR PLAN – ELEV. 1

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



ENERGY STAR

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
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GREENPARK HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	NOV/2017
SECONDO EAST GWILLIMBURY			Scale	3/16" = 1'-0"
			BCIN# 19669	
NEWBERRY 2A 2288 sqft			LO#	76863