

20.130045.000.00.CM

Issue Date: 02/05/21

LAMPONE INVESTMENT INC

ALL CONSTRUCTION SHALL COMPLY WITH THE
ONTARIO BUILDING CODE.

CITY OF MARKHAM

HEAT LOSS/HEAT GAIN CALCULATIONS

MODEL NAME : KIMBERLY 1

ELEV 1, 2 & 3

SITE NAME: LAMPONE INVESTMENTS										DATE: Jul-20		WINTER NATURAL AIR CHANGE RATE 0.358		HEAT LOSS ΔT °F. 78		CSA-F280-12	
BUILDER: GREENPARK HOMES										LO# 86801		SUMMER NATURAL AIR CHANGE RATE 0.112		HEAT GAIN ΔT °F. 13		SB-12 PACKAGE A1	
TYPE: KIMBERLY 1										GFA: 2801							
ROOM USE	EXP. WALL	CLG. HT.	FACTORS		MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2			S-BATH			
			LOSS	GAIN								LOSS	GAIN	LOSS	GAIN		
GRS.WALL AREA			129		284		129	284	344	284	69			43			
GLAZING			LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	
NORTH	21.8	16.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EAST	21.8	41.6	0	0	0	0	0	12	261	499	0	0	0	12	261	499	0
SOUTH	21.8	24.9	0	0	0	15	327	373	0	0	0	0	0	0	0	0	0
WEST	21.8	41.6	21	457	873	14	305	582	0	0	0	19	414	789	0	0	0
SKYLT.	38.1	101.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	25.8	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.6	0.8	108	493	81	255	1164	192	117	535	88	265	1210	199	309	1412	232
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	330	434	194	207	272	122	54	71	32	242	318	142	176	231	103
NO ATTIC EXPOSED CLG	2.8	1.3	0	0	0	0	0	0	0	0	0	24	68	30	27	76	34
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	9	23	4	200	522	86	0	0	0
BASEMENT/CRAWL HEAT LOSS			0		0	0	0	0	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS			0		0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS			1384		2068		867	1965	2995		2471		768		660		
SUB TOTAL HT GAIN				1148		1268		618		1135		1906		2460		605	
LEVEL FACTOR / MULTIPLIER	0.20	0.27			0.20	0.27	0.20	0.27	0.20	0.27	0.20	0.27	0.20	0.27	0.20	0.27	
AIR CHANGE HEAT LOSS			371		554		232		526		802		662		206		177
AIR CHANGE HEAT GAIN				79		88		43		79		132		170		42	
DUCT LOSS			0		0		0		249		380		0		97		84
DUCT GAIN				0		0		0		212		295		0		65	
HEAT GAIN PEOPLE	240		2		480	0	0	0	1		240	1	240	0	0		16
HEAT GAIN APPLIANCES/LIGHTS					670	0	0	0		670		670		0		0	
TOTAL HT LOSS BTU/H			1755		2621		1099	2740	4177		3133		1071		920		
TOTAL HT GAIN x 1.3 BTU/H				3090		1763		859		3036		4215		4602		233	

ROOM USE			FAM			KT/BF			LV/DN			LAUN			W/R			FOY			MUD									WOD			BAS		
EXP. WALL			35			40			45			11			12			21			14									47			168		
CLG. HT.			11			11			11			9			12			12			12									9			9		
GRS.WALL AREA	FACTORS																																		
GLAZING	LOSS GAIN		385			440			495			95			144			252			168									423			1331		
			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN									LOSS GAIN			LOSS GAIN		
NORTH	21.8	16.0	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	0	0	0	0	0		
EAST	21.8	41.6	0	0	0	0	0	0	15	327	623	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SOUTH	21.8	24.9	0	0	0	0	0	0	32	697	797	15	327	373	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	65	75			
WEST	21.8	41.6	32	697	1330	71	1547	2950	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	261	499	0	0	0	
SKYLT.	38.1	101.5	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	0	0	0	0		
DOORS	25.8	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	1034	170	20	517	85					0	0	0	20	517	85		
NET EXPOSED WALL	4.6	0.8	353	1613	265	369	1686	277	448	2047	337	80	364	60	144	658	108	212	969	159	148	676	111					0	0	0	0	0	0		
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					270	995	164	182	669	110		
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	187	246	110	0	0	0	0	0	0	0	0	0					0	0	0	0	0	0		
NO ATTIC EXPOSED CLG	2.8	1.3	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			
EXPOSED FLOOR	2.6	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	0			
BASEMENT/CRAWL HEAT LOSS																																			
SLAB ON GRADE HEAT LOSS																																	4694		
SUBTOTAL HT LOSS					2310			3232			3070			936			658			2002			1193							1256			5945		
SUB TOTAL HT GAIN						1595			3228					1757			543			108			329			196					662			270	
LEVEL FACTOR / MULTIPLIER	0.30	0.45				0.30	0.45		0.30	0.45		0.20	0.27		0.30	0.45		0.30	0.45		0.30	0.45								0.50	1.31				
AIR CHANGE HEAT LOSS					1051			1470			1397			251			299			911			543									9450			
AIR CHANGE HEAT GAIN						110			223			122		38			7			23			14										65		
DUCT LOSS					0			0			0			0			0			0			0										0		
DUCT GAIN						0			0			0		0			0			0			0										0		
HEAT GAIN PEOPLE	240				0		0		0		0	0	0	0	0	0	0	0	0	0	0	0							0				0		
HEAT GAIN APPLIANCES/LIGHTS						670			670			670		670			0			0			0									670			
TOTAL HT LOSS BTU/H					3360			4703			4467			1187			957			2913			1736							1256			15395		
TOTAL HT GAIN x 1.3 BTU/H						3088			5357			3313			1626			150			458			273						861			13300		

TOTAL HEAT GAIN BTU/H: 35430

TONS: 2.95

LOSS DUE TO VENTILATION LOAD BTU/H: 1670

STRUCTURAL HEAT LOSS: 53491

TOTAL COMBINED HEAT LOSS BTU/H: 55161





SITE NAME: LAMPONE INVESTMENTS
BUILDER: GREENPARK HOMES

TYPE: KIMBERLY 1

DATE: Jul-20

GFA: 2801 LO# 86801

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 53,491 TOTAL HEAT GAIN 35,155
AIR FLOW RATE CFM 21.14 AIR FLOW RATE CFM 32.17

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

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

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	13	8	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

MEDLOW
MEDIUM 928
MEDIUM HIGH 1017
HIGH 1131

DESIGN CFM = 1131
CFM @ .6" E.S.P.

TEMPERATURE RISE 47 °F

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	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	BED-3	BED-4	MBR	S-BATH	S-BATH	FAM	KT/BF	KT/BF	LV/DN	LAUN	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	0.88	2.62	1.10	2.74	2.09	1.57	1.07	2.09	1.57	0.88	0.46	0.46	3.36	2.35	2.35	2.23	1.19	0.96	2.91	1.74	4.16	4.16	4.16	4.16
CFM PER RUN HEAT	19	55	23	58	44	33	23	44	33	19	10	10	71	50	50	47	25	20	62	37	88	88	88	88
RM GAIN MBH.	1.55	1.76	0.86	3.04	2.11	2.30	0.93	2.11	2.30	1.55	0.12	0.12	3.09	2.68	2.68	1.66	1.63	0.15	0.46	0.27	0.54	0.54	0.54	0.54
CFM PER RUN COOLING	50	57	28	98	68	74	30	68	74	50	4	4	99	86	86	53	52	5	15	9	17	17	17	17
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	40	42	61	59	60	60	52	63	66	41	51	44	34	20	14	42	55	37	44	27	33	12	33	49
EQUIVALENT LENGTH	200	170	170	130	150	130	140	160	170	200	170	180	150	80	100	100	150	100	120	110	120	90	160	140
TOTAL EFFECTIVE LENGTH	240	212	231	189	210	190	192	223	236	241	221	224	184	100	114	142	205	137	164	137	153	102	193	189
ADJUSTED PRESSURE	0.07	0.08	0.07	0.09	0.08	0.09	0.09	0.08	0.07	0.07	0.08	0.08	0.09	0.16	0.14	0.12	0.08	0.13	0.1	0.13	0.11	0.16	0.08	0.09
ROUND DUCT SIZE	5	5	4	6	6	6	4	6	6	5	4	4	6	6	6	5	5	4	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	140	404	264	296	224	168	264	224	168	140	115	115	362	255	255	345	184	229	455	424	449	449	449	449
COOLING VELOCITY (ft/min)	367	419	321	500	347	377	344	347	377	367	46	46	505	438	438	389	382	57	110	103	87	87	87	87
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	C	A	C	B	A	B	B	A	C	B	B	C	D	D	B	B	C	A	C	C	D	A	A

RUN #	25
ROOM NAME	LV/DN
RM LOSS MBH.	2.23
CFM PER RUN HEAT	47
RM GAIN MBH.	1.66
CFM PER RUN COOLING	53
ADJUSTED PRESSURE	0.17
ACTUAL DUCT LGH.	50
EQUIVALENT LENGTH	150
TOTAL EFFECTIVE LENGTH	200
ADJUSTED PRESSURE	0.09
ROUND DUCT SIZE	5
HEATING VELOCITY (ft/min)	345
COOLING VELOCITY (ft/min)	389
OUTLET GRILL SIZE	3X10
TRUNK	A

SUPPLY AIR TRUNK SIZE										RETURN AIR TRUNK SIZE									
TRUNK	STATIC	ROUND	RECT	VELOCITY						TRUNK	STATIC	ROUND	RECT	VELOCITY					
CFM	PRESS.	DUCT	DUCT	(ft/min)						CFM	PRESS.	DUCT	DUCT	(ft/min)					
TRUNK A	374	0.07	10	12	x	8	561			TRUNK G	0	0.00	0	0	x	8	0		
TRUNK B	577	0.07	11.8	16	x	8	649			TRUNK H	0	0.00	0	0	x	8	0		
TRUNK C	367	0.07	10	12	x	8	551			TRUNK I	0	0.00	0	0	x	8	0		
TRUNK D	1132	0.07	15.2	26	x	8	784			TRUNK J	0	0.00	0	0	x	8	0		
TRUNK E	0	0.00	0	0	x	8	0			TRUNK K	0	0.00	0	0	x	8	0		
TRUNK F	0	0.00	0	0	x	8	0			TRUNK L	0	0.00	0	0	x	8	0		

RETURN AIR #	1	2	3	4	5	6	7	BR											
AIR VOLUME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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
ACTUAL DUCT LGH.	67	59	78	52	58	51	42	1	1	1	1	1	1	1	1	1	1	1	18
EQUIVALENT LENGTH	230	225	195	205	150	155	200	0	0	0	0	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	297	284	273	257	208	206	242	1	1	1	1	1	1	1	1	1	1	1	163
ADJUSTED PRESSURE	0.05	0.05	0.05	0.06	0.07	0.07	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6	6	6	7.8	6	9.5	7.5	0	0	0	0	0	0	0	0	0	0	0	6.9
INLET GRILL SIZE	8	8	8	8	8	8	8	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
INLET GRILL SIZE	14	14	14	24	14	30	14	0	0	0	0	0	0	0	0	0	0	0	14

TYPE: KIMBERLY 1
SITE NAME: LAMPONE INVESTMENTS

LO # 86801

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>5</u> @ 10.6 cfm <u>53</u> cfm	
Other Rooms	<u>5</u> @ 10.6 cfm <u>53.0</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 79.5 cfm		

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>180.2</u> cfm	
Less Principal Ventil. Capacity	<u>79.5</u> cfm	
Required Supplemental Capacity	<u>100.7</u> cfm	

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
<u>79.5</u> cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
79.5 CFM	X 78 F	X 1.08	X	0.25

SUPPLEMENTAL FANS		PANASONIC		
Location	Model	cfm	HVI	Sones
ENS	FV-05-11VK1	50	☒	0.3
ENS-2	FV-05-11VK1	50	☒	0.3
S-BATH	FV-05-11VK1	50	☒	0.3
W/R	FV-05-11VK1	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-20

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.
INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 86801	Model: KIMBERLY 1	Builder: GREENPARK HOMES	Date: 29/07/2020																																																									
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>1218</td> <td>9</td> <td>10962</td> </tr> <tr> <td>First</td> <td>1218</td> <td>11</td> <td>13398</td> </tr> <tr> <td>Second</td> <td>1583</td> <td>9</td> <td>13613.8</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>37,973.8 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>1075.3 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1218	9	10962	First	1218	11	13398	Second	1583	9	13613.8	Third	0	9	0	Fourth	0	9	0	Total:			37,973.8 ft³	Total:			1075.3 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;">0.358</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.112</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;">-21</td> <td style="text-align: center;">43</td> <td style="text-align: center;">78</td> </tr> <tr> <td>Summer DTDc</td> <td style="text-align: center;">24</td> <td style="text-align: center;">31</td> <td style="text-align: center;">7</td> <td style="text-align: center;">13</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.358	SUMMER NATURAL AIR CHANGE RATE	0.112	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-21	43	78	Summer DTDc	24	31	7	13
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																									
Bsmt	1218	9	10962																																																									
First	1218	11	13398																																																									
Second	1583	9	13613.8																																																									
Third	0	9	0																																																									
Fourth	0	9	0																																																									
Total:			37,973.8 ft³																																																									
Total:			1075.3 m³																																																									
WINTER NATURAL AIR CHANGE RATE	0.358																																																											
SUMMER NATURAL AIR CHANGE RATE	0.112																																																											
Design Temperature Difference																																																												
	Tin °C	Tout °C	ΔT °C	ΔT °F																																																								
Winter DTDh	22	-21	43	78																																																								
Summer DTDc	24	31	7	13																																																								
5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.358 x 298.69 x 43 °C x 1.2 = 5539 W = 18900 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ 0.112 x 298.69 x 7 °C x 1.2 = 284 W = 970 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 78 °F x 1.08 x 0.25 = 1670 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 13 °F x 1.08 x 0.25 = 275 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	18,900	7,201	1.312																																																								
2	0.3		12,466	0.455																																																								
3	0.2		14,114	0.268																																																								
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: KIMBERLY 1	BUILDER: GREENPARK HOMES
SFQT: 2801	SITE: LAMPONE INVESTMENTS

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-6	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75

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):	37973.8	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.5 ft
LENGTH: 47.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	168.0 ft

2012 OBC - COMPLIANCE PACKAGE

Component

Compliance Package A1

Nominal	Min. Eff.
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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	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

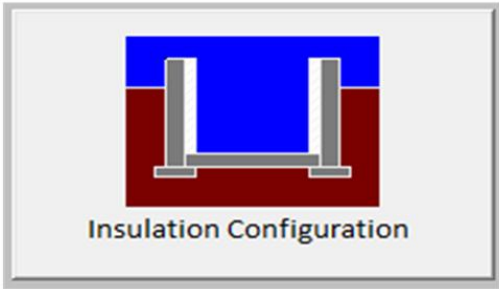
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Markham	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	14.3	 Insulation Configuration
Floor Width (m):	11.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	2.29	
Window Area (m ²):	1.4	
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):		1375

TYPE: KIMBERLY 1

LO# 86801

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Markham			
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):	7.80			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1075.3			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1433.4 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):	0.358			
Cooling Air Leakage Rate (ACH/H):	0.112			

TYPE: KIMBERLY 1

LO# 86801