LAMPONE INVESTMENT INC

CITY OF MARKHAM

HEAT LOSS/HEAT GAIN CALCULATIONS

MODEL NAME : KIMBERLY 2

ELEV 1, 2 & 3

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: LAMPONE INVESTMENTS | DATE: Jul-20 | WINTER NATURAL AIR CHANGE RATE 0.361 | HEAT LOSS ΔT °F. 78 | CSA-F280-12
BUILDER: GREENPARK HOMES | TYPE: KIMBERLY 2 | GFA: 2866 | LO# 86802 | SUMMER NATURAL AIR CHANGE RATE 0.113 | HEAT GAIN ΔT °F. 13 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			ENS-2					S-BATH					
EXP. WALL			36			10				31			33			39			6					6					
CLG. HT.			9			9				9			9			9			9					9					
	FACTORS																												
GRS.WALL AREA	LOSS	GAIN	324			90				279			297			351			54					54					
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	0	0	0			0	0	0			
EAST	21.8	41.6	0	0	0	0	0	0		0	0	0	46	1002	1911	64	1394	2659	0	0	0			0	0	0			
SOUTH	21.8	24.9	0	0	0	14	305	349		0	0	0	0	0	0	0	0	0	7	152	174			0	0	0			
WEST	21.8	41.6	21	457	873	0	0	0		18	392	748	0	0	0	0	0	0	0	0	0			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			
DOORS	25.8	4.3	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0			0	0	0			
NET EXPOSED WALL	4.6	0.8	303	1384	228	76	347	57		261	1192	196	251	1147	189	287	1311	216	47	215	35			54	247	41			
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			
EXPOSED CLG	1.3	0.6	323	424	190	180	236	106		278	365	163	243	319	143	186	244	109	108	142	63			112	147	66			
NO ATTIC EXPOSED CLG	2.8	1.3	0	0	0	0	0	0		0	0	0	20	56	25	61	172	77	0	0	0			0	0	0			
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0		0	0	0	263	687	113	0	0	0	0	0	0			112	292	48			
BASEMENT/CRAWL HEAT LOSS				0			0				0			0			0			0					0				
SLAB ON GRADE HEAT LOSS				0			0				0			0			0			0					0				
SUBTOTAL HT LOSS				2266			889				1950			3211			3121			509					686				
SUB TOTAL HT GAIN					1290			511				1107			2381			3061			273					155			
LEVEL FACTOR / MULTIPLIER			0.20	0.30		0.20	0.30			0.20	0.30		0.20	0.30		0.20	0.30		0.20	0.30				0.20	0.30				
AIR CHANGE HEAT LOSS				681			267				586			964			937			153					206				
AIR CHANGE HEAT GAIN					100			40				86			185			238			21					12			
DUCT LOSS				0			0				0			418			0			0					89				
DUCT GAIN					0			0				0			353			0			0					89			
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0			0		0			
HEAT GAIN APPLIANCES/LIGHTS					721			0				721			721			721			0					721			
TOTAL HT LOSS BTU/H				2947			1156				2535			4593			4059			662					982				
TOTAL HT GAIN x 1.3 BTU/H					3369			717				2801			5044			5538			383					1269			

ROOM USE				FAM			KT/BF			LV/DN			LAUN				FOY			MUD					WOD			BAS		
EXP. WALL				32			51			46			9				16			28					47			170		
CLG. HT.				11			11			11			9				12			12					9			9		
	FACTORS																													
GRS.WALL AREA	LOSS	GAIN		352			561			506			81				192			336					423			1346		
GLAZING				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
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
SOUTH	21.8	24.9		0	0	0	0	0	0	24	523	598	0	0	0		0	0	0	0	0				0	0	0	6	131	149
WEST	21.8	41.6		24	523	997	64	1394	2659	0	0	0	7	152	291		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
DOORS	25.8	4.3		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		328	1498	247	497	2270	374	467	2133	351	74	338	56		152	694	114	316	1444	238			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			270	995	164	185	680	112
EXPOSED CLG	1.3	0.6		0	0	0	0	0	0	0	0	0	102	134	60		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
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
BASEMENT/CRAWL HEAT LOSS					0			0			0			0				0			0							4748		
SLAB ON GRADE HEAT LOSS					0			0			0			0				0			0					0				
SUBTOTAL HT LOSS					2021			3665			2983			625				1728			1961					1256			6075		
SUB TOTAL HT GAIN						1244			3033			1572			406				284			323					662			346	
LEVEL FACTOR / MULTIPLIER				0.30	0.48		0.30	0.48		0.30	0.48		0.20	0.30			0.30	0.48		0.30	0.48							0.50	1.36	
AIR CHANGE HEAT LOSS					977			1771			1442			188				835			947								9953	
AIR CHANGE HEAT GAIN						97			236			122			32				22			25								79
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		0		0	0		0			0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS						721			721			721			721				0			0					0			721
TOTAL HT LOSS BTU/H					2998			5436			4425			812				2563			2908					1256			16028	
TOTAL HT GAIN x 1.3 BTU/H						2680			5187			3140			1507				398			452					861			1489

TOTAL HEAT GAIN BTU/H: 35108 | TONS: 2.93 | LOSS DUE TO VENTILATION LOAD BTU/H: 1670 | STRUCTURAL HEAT LOSS: 53358 | TOTAL COMBINED HEAT LOSS BTU/H: 55028

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.

Michael O'Rourke

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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SITE NAME: LAMPONE INVESTMENTS
BUILDER: GREENPARK HOMES — TYPE: KIMBERLY 2 — DATE: Jul-20 — GFA: 2866 — LO# 86802

HEATING CFM 1131 | COOLING CFM 1131
TOTAL HEAT LOSS 53,358 | TOTAL HEAT GAIN 34,834
AIR FLOW RATE CFM 21.2 | AIR FLOW RATE CFM 32.47

furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure for s/a & r/a 0.35
plenum pressure s/a 0.18 | r/a pressure 0.17
max s/a dif press. loss 0.02 | r/a grille press. Loss 0.02
min adjusted pressure s/a 0.16 | adjusted pressure r/a 0.15

#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 = **1131**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	13	6	4
R/A	0	0	5	2	1

All S/A diffusers 4"x10" unless noted otherwise on layout.
All S/A runs 5"Ø unless noted otherwise on layout.

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	19	20	21	22	23	24
ROOM NAME	MBR	ENS	BED-3	BED-2	BED-3	BED-4	ENS-2	BED-4	BED-3	MBR	S-BATH	S-BATH	FAM	KT/BF	KT/BF	LV/DN	LAUN	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.47	1.16	1.53	2.54	1.53	2.03	0.66	2.03	1.53	1.47	0.49	0.49	3.00	2.72	2.72	4.42	0.81	2.56	2.91	4.32	4.32	4.32	4.32
CFM PER RUN HEAT	31	24	32	54	32	43	14	43	32	31	10	10	64	58	58	94	17	54	62	92	92	92	92
RM GAIN MBH.	1.68	0.72	1.68	2.80	1.68	2.77	0.38	2.77	1.68	1.68	0.63	0.63	2.68	2.59	2.59	3.14	1.51	0.40	0.45	0.59	0.59	0.59	0.59
CFM PER RUN COOLING	55	23	55	91	55	90	12	90	55	55	21	21	87	84	84	102	49	13	15	19	19	19	19
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.17	0.16	0.17	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	34	17	60	59	47	48	28	48	48	40	37	54	41	26	16	28	34	41	38	34	18	18	28
EQUIVALENT LENGTH	190	190	140	140	130	170	180	140	120	150	170	160	130	120	140	110	120	150	140	140	130	90	130
TOTAL EFFECTIVE LENGTH	224	207	200	199	177	218	208	188	168	190	207	214	171	146	156	138	154	191	178	174	148	108	158
ADJUSTED PRESSURE	0.08	0.08	0.09	0.08	0.1	0.07	0.08	0.09	0.1	0.09	0.08	0.08	0.09	0.11	0.1	0.12	0.11	0.09	0.1	0.09	0.11	0.15	0.1
ROUND DUCT SIZE	5	4	5	**6**	5	**6**	4	**6**	5	5	4	4	**6**	**6**	**6**	**6**	4	5	5	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	228	275	235	275	235	219	161	219	235	228	115	115	326	296	296	479	195	396	455	469	469	469	469
COOLING VELOCITY (ft/min)	404	264	404	464	404	459	138	459	404	404	241	241	444	428	428	520	562	95	110	97	97	97	97
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	B	B	B	C	B	A	A	A	B	D	B	C	C	D	D	A	D	A	C	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	

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	340	0.07	9.7	12	x	8	510	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	593	0.07	11.9	16	x	8	667	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	282	0.08	8.7	10	x	8	508	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	538	0.08	11.1	14	x	8	692	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 CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	x	8	0
TRUNK P	0	0.05	0	0	x	8	0
TRUNK Q	0	0.05	0	0	x	8	0
TRUNK R	0	0.05	0	0	x	8	0
TRUNK S	0	0.05	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	1131	0.05	16.5	32	x	8	636
TRUNK Y	535	0.05	12.5	18	x	8	535
TRUNK Z	230	0.05	9.1	10	x	8	414
DROP	1131	0.05	16.5	24	x	10	679

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	
AIR VOLUME	105	85	75	85	75	375	155	0	0	0	0	0	0	0	0	176
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
ACTUAL DUCT LGH.	37	40	78	54	49	27	36	1	1	1	1	1	1	1	1	17
EQUIVALENT LENGTH	155	195	235	175	235	200	200	0	0	0	0	0	0	0	0	225
TOTAL EFFECTIVE LH	192	235	313	229	284	227	236	1	1	1	1	1	1	1	1	242
ADJUSTED PRESSURE	0.08	0.06	0.05	0.06	0.05	0.07	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.06
ROUND DUCT SIZE	6	6	6	6	6	10	7.5	0	0	0	0	0	0	0	0	7.9
INLET GRILL SIZE	8	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	X
INLET GRILL SIZE	14	14	14	14	14	30	14	0	0	0	0	0	0	0	0	24

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Michael O'Rourke INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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TYPE: KIMBERLY 2 LO # 86802
SITE NAME: LAMPONE INVESTMENTS

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	2	@ 21.2 cfm	42.4	cfm
Other Bedrooms	3	@ 10.6 cfm	31.8	cfm
Kitchen & Bathrooms	4	@ 10.6 cfm	42.4	cfm
Other Rooms	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.		TOTAL	180.2	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	180.2	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	100.7	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 65H Location: BSMT

79.5 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
PWD	FV-05-11VK1	50	✓	0.3

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE 65H

155 cfm high 64 cfm low

75 % 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: Michael O'Rourke.

HRAI # 001820

Date: July-20

I REVIEW AND TAKE RESPONIBILITY 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

Michael O'Rourke.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 86802 Model: KIMBERLY 2 Builder: GREENPARK HOMES Date: 29/07/2020

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1253	9	11277
First	1253	11	13783
Second	1613	9	14517
Third	0	9	0
Fourth	0	9	0
		Total:	39,577.0 ft³
		Total:	1120.7 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.361
SUMMER NATURAL AIR CHANGE RATE	0.113

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

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

0.361 x 311.30 x 43 °C x 1.2 = 5834 W

= **19906 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

$$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$$

= 0.113 x 311.30 x 7 °C x 1.2 = 299 W

= **1022 Btu/h**

5.2.3.2 Heat Loss due to Mechanical 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**

6.2.7 Sensible heat Gain due to Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

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	19,906	7,331	1.358
2	0.3		12,358	0.483
3	0.2		13,256	0.300
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

HVAC DESIGNS LTD.
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: KIMBERLY 2 **BUILDER:** GREENPARK HOMES
SFQT: 2866 **LO#** 86802 **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 (ft^3):	39577.0	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:	7.5 ft
LENGTH: 48.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	170.0 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	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

HVAC Designs Ltd.
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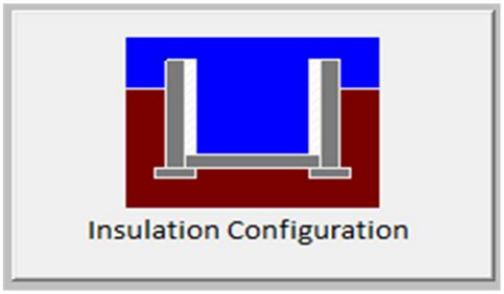
Residential Foundation Thermal Load Calculator

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):	**14.6**	 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):	**1.7**	
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):	**1391**	

TYPE: KIMBERLY 2
LO# 86802

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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):	7.92
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	1120.7
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 1493.9 cm^2
	3.57 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 37.5 / Total Exhaust 37.5
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.361**
Cooling Air Leakage Rate (ACH/H):	**0.113**

TYPE: KIMBERLY 2

LO# 86802