

SITE NAME: LAMBERT'S LANE PH.2

BUILDER: GREENPARK HOMES

TYPE: BARTON 4

GFA: 2710

DATE: Feb-19

LO# 81368

WINTER NATURAL AIR CHANGE RATE 0.227

HEAT LOSS AT °F. 74

CSA-F280-12

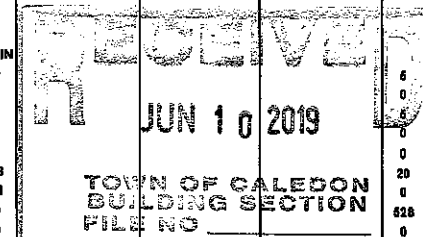
SUMMER NATURAL AIR CHANGE RATE 0.074

HEAT GAIN AT °F. 11

ENERGYSTAR

ROOM USE			MBR		ENS		WIC		BED-2		BED-3		BED-4		BATH		ENS-2		ENERGY STAR		
EXP. WALL			33		23		7		12		27		38		12		8				
CLG. HT.			9		9		9		9		9		9		9		9				
FACTORS																					
GRS.WALL AREA			297		207		83		108		243		342		108		72				
GLAZING			LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN				
NORTH			18.6	15.1	0	0	0	8	148	121	0	0	0	18	334	273	0	0	0	0	0
EAST			18.6	40.7	0	0	0	0	0	0	0	0	0	30	857	1222	23	427	937	0	0
SOUTH			18.6	24.1	0	0	0	0	0	0	0	0	0	0	0	0	8	148	193	15	278
WEST			18.6	40.7	32	584	1303	14	280	570	0	0	0	0	0	0	0	0	0	0	0
SKYL.T.			31.2	99.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS			24.7	3.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL			3.5	0.5	285	932	138	186	681	96	63	222	33	80	316	47	213	748	111	311	1094
NET EXPOSED BSMT WALL ABOVE GR			3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG			1.3	0.6	282	363	167	146	182	81	76	95	42	200	261	111	216	269	120	212	268
NO ATTIC EXPOSED CLG			2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	26	67	30	0	0
EXPOSED FLOOR			2.5	0.4	0	0	0	0	0	0	0	0	0	216	535	79	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS					0		0	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	0	0
SUBTOTAL HT LOSS					1879		1240		317		801		2110		2001		731		648		139
SUB TOTAL HT GAIN					1598		868		75		431		1832		1438		465				
LEVEL FACTOR / MULTIPLIER			0.20	0.21		0.20	0.21	0.20	0.21	0.20	0.21	0.20	0.21	0.20	0.21	0.20	0.21	0.20	0.21		
AIR CHANGE HEAT LOSS					400		264		67		192		450		428		158		138		9
AIR CHANGE HEAT GAIN						103		56		6		28		98		93		30			15
DUCT LOSS					0		0		0		0		258		0		0		78		0
DUCT GAIN					0		0		0		0		268		0		0				15
HEAT GAIN PEOPLE			240	2	480	0	0	0	0	1	240	1	240	1	240	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS					706		0		0		706		706		706		0		0		0
TOTAL HT LOSS BTU/H					2279		1606		384		1093		2816		2428		886		862		211
TOTAL HT GAIN x 1.3 BTU/H					3754		1202		104		1827		3686		3222		644				

ROOM USE	EXP. WALL	CLG. HT.	FAM	DIN	KT/BR	LAUN	PWD	FOY	MUD	BAS
33	32	48	7	12	40	9	10	10	11	176
10	10	10	10	10	10	10	10	10	10	9
FACTORS										
GRS.WALL AREA	330	320	480	63	120	400	99	1068		
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN		
NORTH	18.6 15.1	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	6 93 76	
EAST	18.6 40.7	0 0 0	0 0 0	0 0 0	0 0 0	6 93 204	0 0 0	0 0 0	0 0 0	
SOUTH	18.6 24.1	0 0 0	24 445 578	0 0 0	7 130 168	0 0 0	0 0 0	0 0 0	0 0 0	
WEST	18.6 40.7	28 482 1059	0 0 0	33 812 1344	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	
SKYL.T.	31.2 99.9	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	24.7 3.7	0 0 0	0 0 0	16 384 88	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	
NET EXPOSED WALL	3.5 0.6	304 1069 168	296 1041 164	431 1515 225	56 197 29	113 397 59	355 1248 185	75 278 41	20 493 73	
NET EXPOSED BSMT WALL ABOVE GR	3.5 0.5	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	
EXPOSED CLG	1.3 0.6	0 0 0	0 0 0	0 0 0	90 113 80	0 0 0	0 0 0	0 0 0	0 0 0	
NO ATTIC EXPOSED CLG	2.7 1.2	10 27 12	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	
EXPOSED FLOOR	2.5 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	0	0	
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0	0	0	
SUBTOTAL HT LOSS		1578	1486	2522	440	527	2327	771	6117	
SUB TOTAL HT GAIN		1229	732	1527	248	227	535	114	5950	
LEVEL FACTOR / MULTIPLIER	0.30 0.36	0.30 0.36	0.30 0.36	0.30 0.36	0.20 0.21	0.30 0.36	0.30 0.36	0.30 0.36	0.30 0.36	
AIR CHANGE HEAT LOSS	562	529	898	94	188	829	276	35	5468	
AIR CHANGE HEAT GAIN	79	47	105	18	15	38	7	0	35	
DUCT LOSS	0	0	0	0	0	0	0	0	0	
DUCT GAIN	0	0	0	0	0	0	0	0	0	
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS		0	0	706	0	706	0	0	0	
TOTAL HT LOSS BTU/H		2140	2615	3421	533	716	3156	1045	14118	
TOTAL HT GAIN x 1.3 BTU/H		1701	1013	3170	1281	315	740	158	1671	



TOTAL HEAT GAIN BTU/H:

24914

TONS: 2.08

LOSS DUE TO VENTILATION LOAD BTU/H: 1583

STRUCTURAL HEAT LOSS: 39398

TOTAL COMBINED HEAT LOSS BTU/H: 48981

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

THIS STRUCTURE MUST BE
CONSTRUCTED TO MEET OR
EXCEED THE PROVISIONS OF
THE ONTARIO BUILDING CODE

Michael O'Rourke

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

SITE NAME: LAMBERT'S LANE PH.2
BUILDER: GREENPARK HOMES

TYPE: BARTON 4

DATE: Feb-19

GFA: 2710 LO# 81365

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 39,388 TOTAL HEAT GAIN 24,678
AIR FLOW RATE CFM 28.71 AIR FLOW RATE CFM 45.83

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

#GOODMAN
GMCC960603BNA 60
FAN SPEED LOW
MEDLOW
MEDIUM
MEDIUM HIGH
HIGH 1131

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

DESIGN CFM = 1131
CFM @ 8" E.S.P

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	12	7	4
R/A	0	0	4	2	1

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

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

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-3	BED-4	MBR	ENS-2	FAM	DIN	KT/BR	KT/BR	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.14	1.50	0.38	1.09	1.41	1.21	0.89	1.41	1.21	1.14	0.86	2.14	2.02	1.71	1.71	0.53	0.72	3.16	1.05	3.53	3.53	3.53	3.53
CFM PER RUN HEAT	33	43	11	31	40	35	25	40	35	33	25	61	58	49	49	15	21	91	30	101	101	101	101
RM GAIN MBH	1.88	1.20	0.10	1.83	1.84	1.61	0.64	1.84	1.81	1.88	0.21	1.70	1.01	1.58	1.58	1.26	0.31	0.74	0.18	0.42	0.42	0.42	0.42
CFM PER RUN COOLING	86	55	5	84	84	74	30	84	74	86	10	78	46	73	73	58	14	34	7	19	19	19	19
ADJUSTED PRESSURE	0.16	0.17	0.17	0.16	0.16	0.17	0.17	0.16	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	53	59	30	25	56	73	43	54	68	45	45	48	29	36	44	29	48	47	25	40	35	24	50
EQUIVALENT LENGTH	160	190	130	150	140	180	180	130	180	150	150	160	170	130	140	190	150	130	160	100	110	120	140
TOTAL EFFECTIVE LENGTH	213	249	160	175	198	253	223	184	248	195	195	206	198	166	184	219	198	177	185	140	145	144	190
ADJUSTED PRESSURE	0.08	0.07	0.11	0.09	0.08	0.07	0.08	0.09	0.07	0.08	0.09	0.08	0.09	0.1	0.09	0.08	0.09	0.09	0.09	0.12	0.11	0.11	0.09
ROUND DUCT SIZE	6	5	4	6	6	6	4	6	6	6	4	6	5	5	5	5	4	6	4	6	6	6	6
HEATING VELOCITY (ft/min)	168	316	128	158	204	178	287	204	178	168	287	311	426	380	380	110	241	464	344	515	515	515	515
COOLING VELOCITY (ft/min)	438	404	57	428	428	377	344	428	377	438	115	398	338	536	536	426	161	173	80	97	97	97	97
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	4X10	3X10	4X10	4X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10
TRUNK	A	A	B	B	D	C	D	D	C	A	D	A	D	A	A	D	C	C	D	A	B	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	1.14	33	1.88	86	0.16	53	160	213	0.08	6	168	438	4X10	A
2	ENS	1.50	43	1.20	55	0.17	59	190	249	0.07	5	316	404	3X10	A
3	WIC	0.38	11	0.10	5	0.17	30	130	160	0.11	4	128	57	3X10	B
4	BED-2	1.09	31	1.83	84	0.16	25	150	175	0.09	6	158	428	4X10	B
5	BED-3	1.41	40	1.84	84	0.16	56	140	198	0.08	6	204	428	4X10	D
6	BED-4	1.21	35	1.61	74	0.17	73	180	253	0.07	6	178	377	4X10	C
7	BATH	0.89	25	0.64	30	0.17	43	180	223	0.08	4	287	344	3X10	D
8	BED-3	1.41	40	1.84	84	0.16	54	130	184	0.09	6	204	428	4X10	D
9	BED-4	1.21	35	1.81	74	0.17	68	180	248	0.07	6	178	377	4X10	C
10	MBR	1.14	33	1.88	86	0.16	45	150	195	0.08	6	168	438	4X10	A
11	ENS-2	0.86	25	0.21	10	0.17	48	150	195	0.09	4	287	115	3X10	D
12	FAM	2.14	61	1.70	78	0.17	29	160	206	0.08	6	311	398	4X10	A
13	DIN	2.02	58	1.01	46	0.17	36	170	198	0.09	5	426	338	3X10	D
14	KT/BR	1.71	49	1.58	73	0.17	44	130	166	0.1	5	380	536	3X10	A
15	KT/BR	1.71	49	1.58	73	0.17	44	140	184	0.1	5	380	536	3X10	A
17	LAUN	0.53	15	1.26	58	0.17	29	190	219	0.08	5	110	426	3X10	D
18	PWD	0.72	21	0.31	14	0.17	48	150	198	0.09	4	241	161	3X10	C
19	FOY	3.16	91	0.74	34	0.16	47	130	177	0.09	6	464	173	4X10	C
20	MUD	1.05	30	0.18	7	0.17	25	160	185	0.12	4	344	80	3X10	D
21	BAS	3.53	101	0.42	19	0.16	40	100	145	0.11	6	515	97	4X10	A
22	BAS	3.53	101	0.42	19	0.16	35	110	144	0.11	6	515	97	4X10	B
23	BAS	3.53	101	0.42	19	0.16	24	120	144	0.11	6	515	97	4X10	B
24	BAS	3.53	101	0.42	19	0.16	50	140	190	0.09	6	515	97	4X10	C

THIS DESIGN WAS
CONSTRUCTED TO MEET OR
EXCEED THE PROVISIONS OF
THE ONTARIO BUILDING CODE

SUPPLY AIR TRUNK SIZE															RETURN 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	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)	TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	369	0.07	10	12	x	8	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.05	0	0	x	8	TRUNK O	0	0.05	0	0	0
TRUNK B	613	0.07	12.1	18	x	8	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.05	0	0	x	8	TRUNK P	0	0.05	0	0	0
TRUNK C	283	0.07	9	10	x	8	TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.05	0	0	x	8	TRUNK Q	0	0.05	0	0	0
TRUNK D	516	0.07	11.3	14	x	8	TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.05	0	0	x	8	TRUNK R	0	0.05	0	0	0
TRUNK E	1129	0.07	15.2	26	x	8	TRUNK K	0	0.00	0	0	x	8	0	TRUNK S	0	0.05	0	0	x	8	TRUNK S	0	0.05	0	0	0
TRUNK F	0	0.00	0	0	x	8	TRUNK L	0	0.00	0	0	x	8	0	TRUNK T	0	0.05	0	0	x	8	TRUNK T	0	0.05	0	0	0
															TRUNK U	0	0.05	0	0	x	8	TRUNK U	0	0.05	0	0	0
															TRUNK V	0	0.05	0	0	x	8	TRUNK V	0	0.05	0	0	0
															TRUNK W	0	0.05	0	0	x	8	TRUNK W	0	0.05	0	0	0
															TRUNK X	1131	0.05	18.5	32	x	8	TRUNK X	1131	0.05	18.5	32	636
															TRUNK Y	495	0.05	12.1	18	x	8	TRUNK Y	495	0.05	12.1	18	495
															TRUNK Z	305	0.05	10.1	12	x	8	TRUNK Z	305	0.05	10.1	12	458
															DROP	1131	0.05	18.5	24	x	10	DROP	1131	0.05	18.5	24	679

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
AIR VOLUME	135	135	115	115	360	75	0	0	0	0	0	0	0	0	196
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	41	37	81	63	43	49	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	185	185	225	265	190	270	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	226	222	286	328	233	319	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.07	0.07	0.05	0.05	0.06	0.05	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	6.8	6.8	7	7	10.3	6	0	0	0	0	0	0	0	0	7.2
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

CSA F280-12 Residential Heat Loss and Heat Gain Calculations
Formula Sheet (For Air Leakage / Ventilation Calculation)

LO#: 81365

Model: BARTON 4

Builder: GREENPARK HOMES

Date: 2/4/2019

Volume Calculation
Air Change & Delta T Data
House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1195	9	10755
First	1195	10	11950
Second	1503	9	13527
Third	0	9	0
Fourth	0	9	0
Total:			36,232.0 ft³
Total:			1026.0 m³

WINTER NATURAL AIR CHANGE RATE	0.227
SUMMER NATURAL AIR CHANGE RATE	0.074

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-19	41	74
Summer DTDc	24	30	6	11

5.2.3.1 Heat Loss due to Air Leakage
6.2.6 Sensible Gain due to Air Leakage

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

$$0.227 \times 284.99 \times 41^\circ\text{C} \times 1.2 = 3205 \text{ W}$$

$$= 10936 \text{ Btu/h}$$

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

$$= 0.074 \times 284.99 \times 6^\circ\text{C} \times 1.2 = 154 \text{ W}$$

$$= 527 \text{ Btu/h}$$

5.2.3.2 Heat Loss due to Mechanical Ventilation
6.2.7 Sensible heat Gain due to Ventilation

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

$$80 \text{ CFM} \times 74^\circ\text{F} \times 1.08 \times 0.25 = 1593 \text{ Btu/h}$$

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

$$80 \text{ CFM} \times 11^\circ\text{F} \times 1.08 \times 0.25 = 236 \text{ Btu/h}$$

5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)

$$HL_{airr} = \text{Level Factor} \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$$

Level	Level Factor (LF)	HLairbv 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	10,936	8,650	0.632
2	0.3		9,212	0.356
3	0.2		10,266	0.213
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 HLairbv = 0

THIS STRUCTURE MUST BE
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THE ONTARIO BUILDING CODE

TYPE: BARTON 4
 SITE NAME: LAMBERT'S LANE PH.2

LO # 81365

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	5 @ 10.6 cfm	53 cfm
Other Rooms	4 @ 10.6 cfm	42.4 cfm
Table 9.32.3.A.	TOTAL	169.6 cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED		9.32.3.4.(1)
1 Bedroom	31.8	cfm
2 Bedroom	47.7	cfm
3 Bedroom	63.5	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	169.6	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	90.1	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
79.5 cfm	3.0 sones
☒ HVI Approved	

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
79.5 CFM	X 74 F	X 1.08	X 0.25

SUPPLEMENTAL FANS		PANASONIC		
Location	Model	cfm	HVI	Sones
ENS	FV-05-11VK1	50	☒	0.3
BATH	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	☒ 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:	February-19

 I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C.32.5 OF THE BUILDING CODE
 INDIVIDUAL BCIN: 19869 *Michael O'Rourke* MICHAEL O'ROURKE

 THIS STRUCTURE MUST BE
 CONSTRUCTED TO MEET OR
 EXCEED THE PROVISIONS OF
 THE ONTARIO BUILDING CODE

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** BARTON 4**BUILDER:** GREENPARK HOMES**SFQT:** 2710**LO#** 81365**SITE:** LAMBERT'S LANE PH.2**DESIGN ASSUMPTIONS**

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
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:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	36232.0	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:	6.0 ft
LENGTH: 60.0 ft	WIDTH: 28.0 ft	EXPOSED PERIMETER:	176.0 ft

2012 OBC - COMPLIANCE PACKAGE

Component	Compliance Package ENERGYSTAR	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	R22+R5	21.10
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	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.9	-

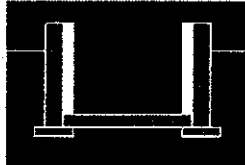
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

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Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	18.3	 Insulation Configuration
Floor Width (m):	8.5	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	0.9	
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):		1792

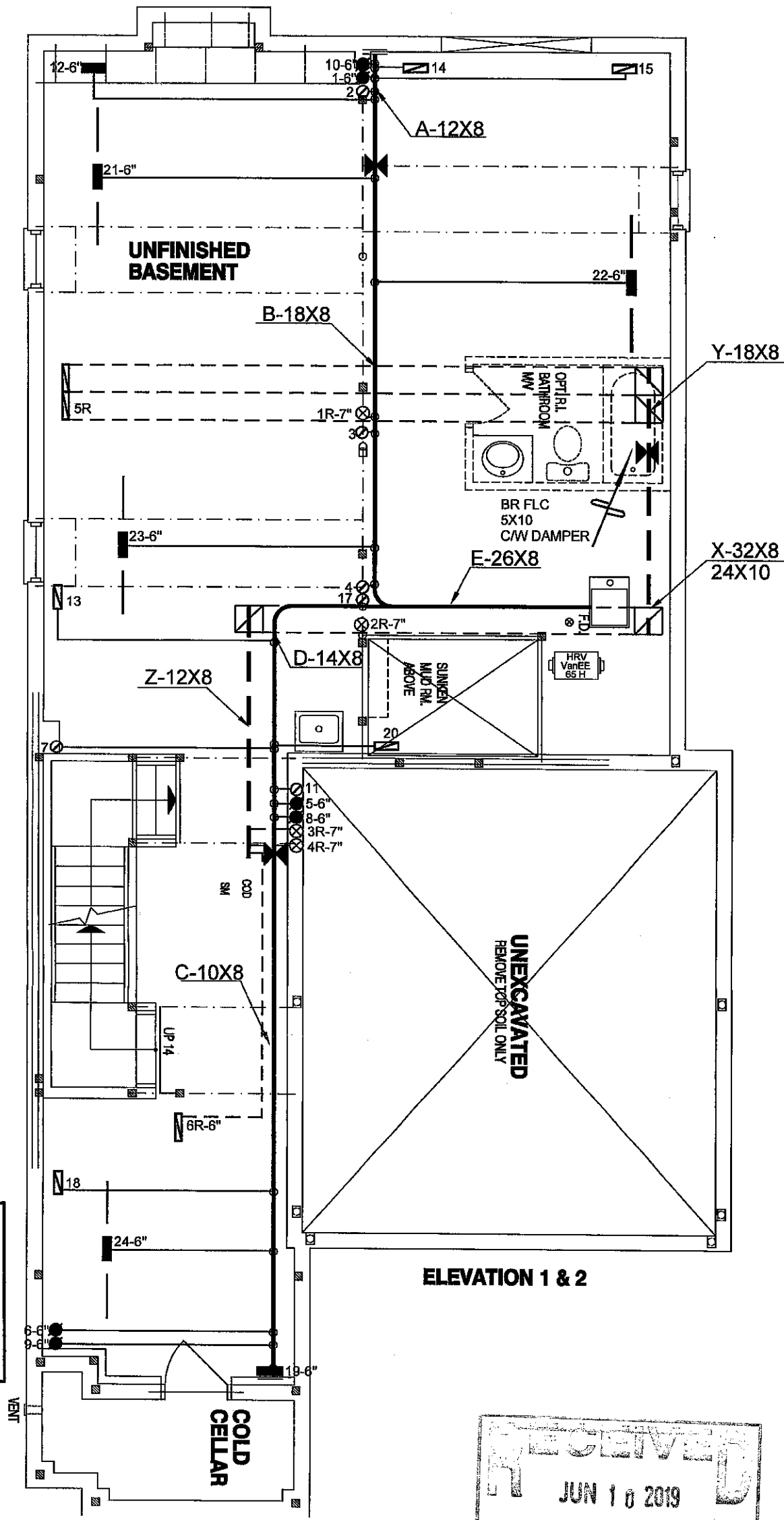
THIS STRUCTURE MUST BE
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THE ONTARIO BUILDING CODETYPE: BARTON 4
LO# 81365

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Brampton			
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):	1026.0			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	957.7 cm ²		
	2.50	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):	0.227			
Cooling Air Leakage Rate (ACH/H):	0.074			

TYPE: BARTON 4
LO# 81365THIS STRUCTURE MUST BE
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ELEVATION 1 & 2

CERTIFIED MODEL
PRE-APPROVED
FOR PERMIT APPLICATION AS PER THE
ONTARIO BUILDING CODE
TOWN OF CALEDON BUILDING DIVISION
REVIEWED BY *[Signature]* (SM)
DATE June 21, 2019
FILE # CMOD - BARTON 4

(ELEVATION 1 & 2)

THIS STRUCTURE MUST BE
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THE ONTARIO BUILDING CODE

RECEIVED
JUN 10 2019
TOWN OF CALEDON
BUILDING SECTION
FILE NO.



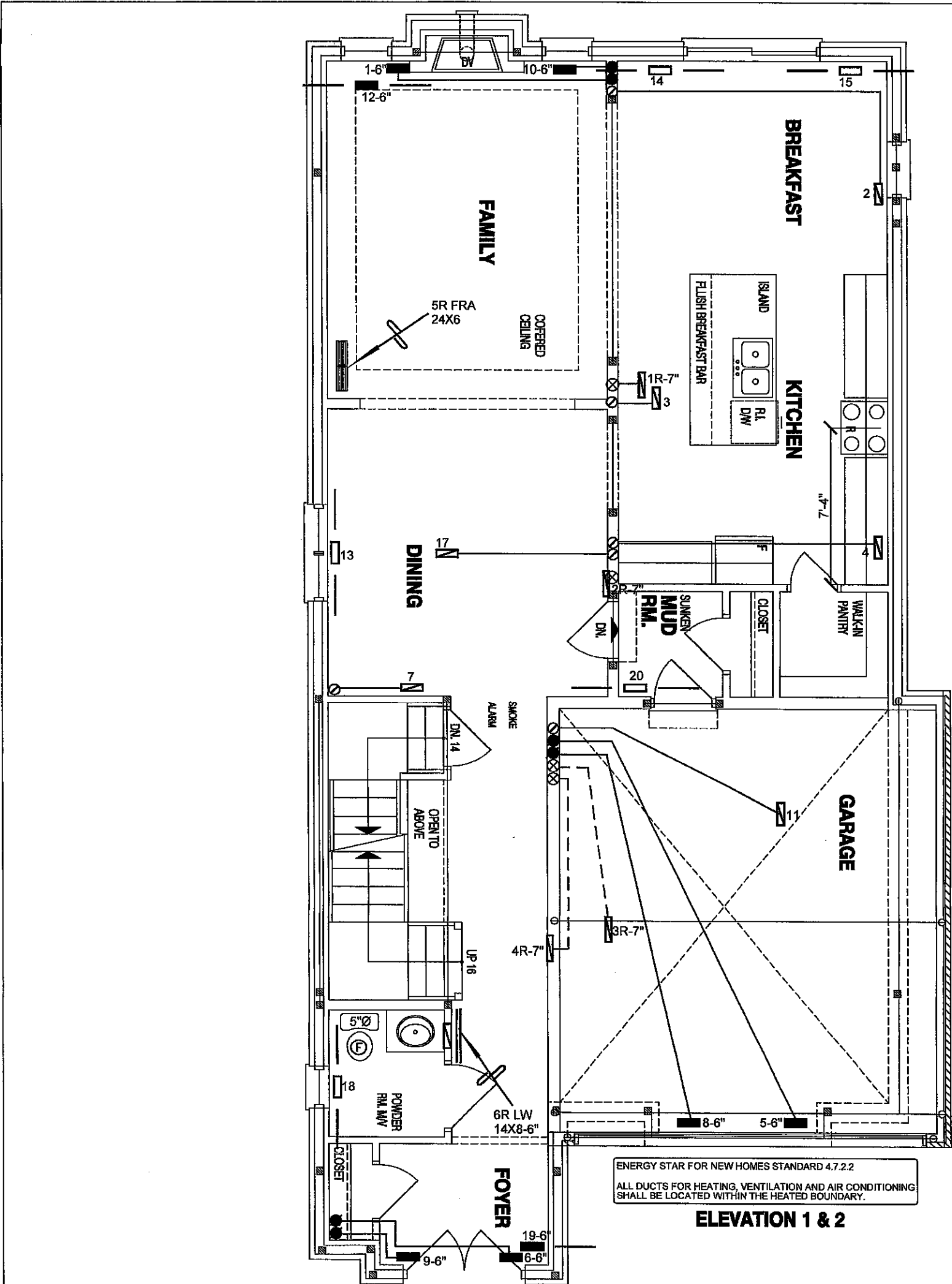
I MICHAEL OROURKE HAVE REVIEWED
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C.3.2.3 OF THE
BUILDING CODE.
[Signature]
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

HVAC LEGEND								REVISIONS	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Date
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	3.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	2.	
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	1.	

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Client GREENPARK HOMES		 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 40991 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title	
Project Name LAMBERTS LANE HOME CORP PH 2 CALEDON, ONTARIO			MAKE GOODMAN	3RD FLOOR					BASEMENT HEATING LAYOUT	
			MODEL GMEC960603BNA	2ND FLOOR		12	4	3		
			INPUT 60 MBTU/H	1ST FLOOR		7	2	2		
			OUTPUT 57.6 MBTU/H	BASEMENT		4	1	0		
BARTON 4 2710 sqft		COOLING 2.0 TONS	ALL S/A DIFFUSERS 4 "x10" ON LAYOUT. ALL S/A RUNS 5" Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A							Date FEB/2019
		FAN SPEED 1131 cfm @ 0.5" w.c.								Scale 3/16" = 1'-0"
									BCIN# 19669	
									LO#	81365

APPLICANT COPY

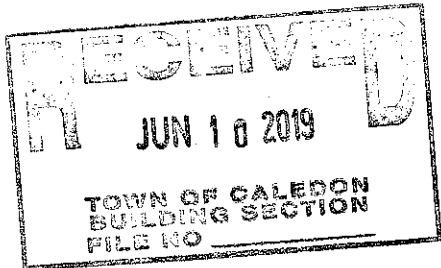


I MICHAEL O'DRISKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C. 32.5 OF THE BUILDING CODE.
Michael O'Driscoll
Michael O'Driscoll, BCIN# 19669
HVAC DESIGNS LTD.

DUCTS LOCATED IN UNCONDITIONED SPACES SHALL BE SEALED TO A CLASS A SEAL LEVEL IN ACCORDANCE WITH THE SMACNA MANUAL

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.

ELEVATION 1 & 2



CSA-F280-12

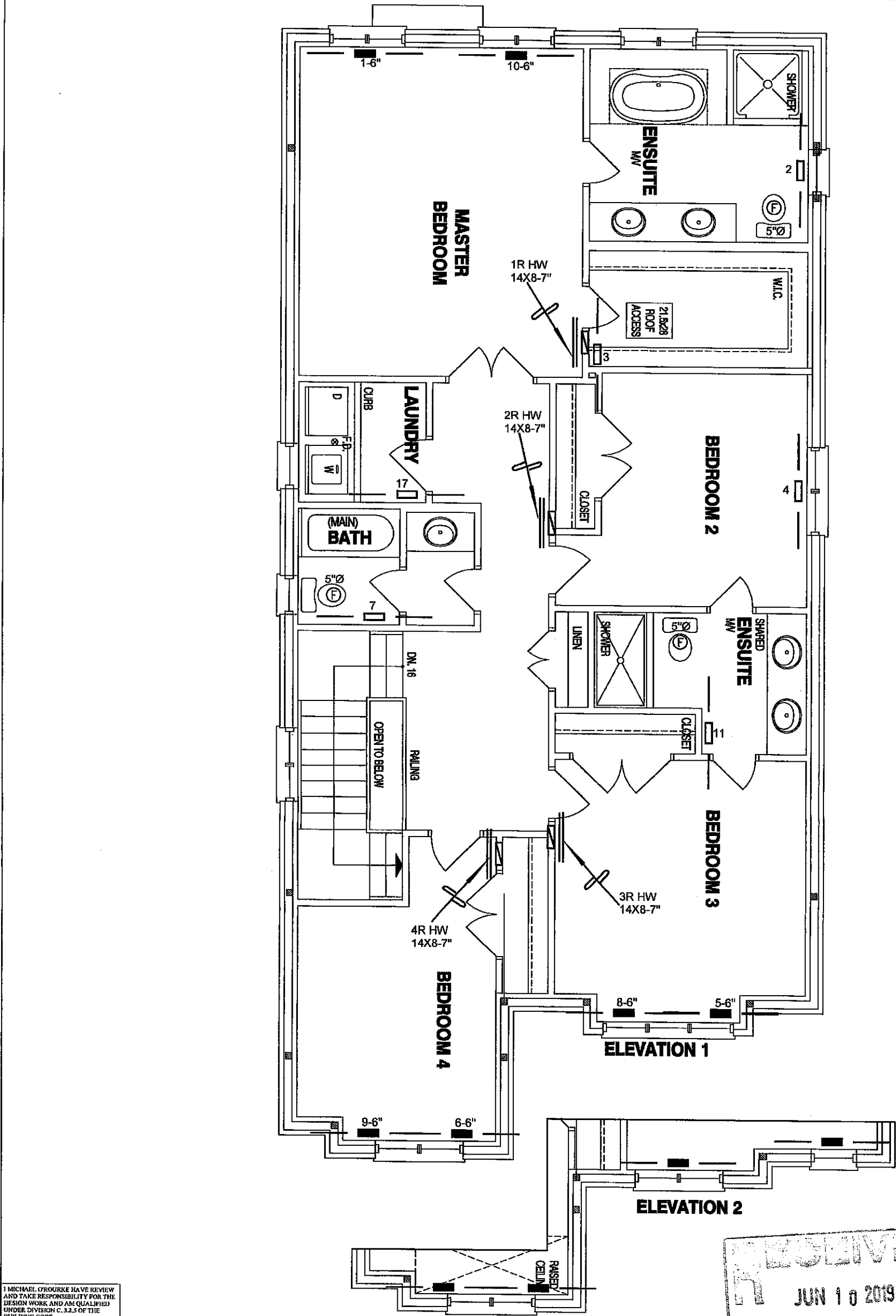


ENERGY STAR

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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GREENPARK HOMES				FIRST FLOOR HEATING LAYOUT	
Project Name				Date	FEB/2019
LAMBERTS LANE HOME CORP PH 2 CALEDON, ONTARIO				Scale	3/16" = 1'-0"
				BCIN# 19669	
BARTON 4		2710 sqft	LO#	81365	



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.

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BUILDING SECTION
FILE NO.

CSA-F280-12

Energy Star

HVAC LEGEND								REVISIONS	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Date
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	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	2.	
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	1.	

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Project Name LAMBERTS LANE HOME CORP PH 2 CALEDON, ONTARIO				Date FEB/2019		
BARTON 4 2710 sqft		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.		Scale 3/16" = 1'-0"		
				BCIN# 19669		
				LO#	81365	