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: LAMBERT'S LANE PH.2 | DATE: Jun-19 | WINTER NATURAL AIR CHANGE RATE 0.258 | HEAT LOSS ΔT °F. 74 | CSA-F280-12
BUILDER: GREENPARK HOMES | TYPE: BARTON 1 | GFA: 2402 | LO# 82654 | SUMMER NATURAL AIR CHANGE RATE 0.084 | HEAT GAIN ΔT °F. 11 | ENERGYSTAR

ROOM USE			MBR			ENS			WIC			BED-2			BED-3				BATH			FAM		
EXP. WALL			30			25			8			33			13				12			39		
CLG. HT.			8			8			8			8			8				8			10		
	FACTORS																							
GRS.WALL AREA	LOSS	GAIN	242			202			65			267			105				97			393		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN
NORTH	18.6	14.4	0	0	0	18	297	231	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
EAST	18.6	38.5	0	0	0	0	0	0	0	0	0	24	445	925	0	0	0		0	0	0	56	1039	2159
SOUTH	18.6	22.8	0	0	0	0	0	0	0	0	0	0	0	0	16	297	366		7	130	160	0	0	0
WEST	18.6	38.5	32	594	1234	8	148	308	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
SKYLT.	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
DOORS	24.7	3.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
NET EXPOSED WALL	3.5	0.5	210	740	110	178	626	93	65	227	34	243	853	126	89	313	46		90	316	47	337	1186	176
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
EXPOSED CLG	1.3	0.6	282	353	157	150	188	84	82	103	46	125	157	70	157	197	88		124	155	69	372	466	207
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	25	67	30	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	305	759	113
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				1687			1259			330			1522			807				602			3450	
SUB TOTAL HT GAIN					1509			716			79			1151			499				276			2654
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	
AIR CHANGE HEAT LOSS				362			270			71			326			173				129			740	
AIR CHANGE HEAT GAIN					82			39			4			63			27				15			145
DUCT LOSS				0			0			0			0			0				0			419	
DUCT GAIN					0			0			0			0			0				0			335
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240		0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					548			0			0			548			548				0			548
TOTAL HT LOSS BTU/H				2049			1529			401			1848			980				731			4609	
TOTAL HT GAIN x 1.3 BTU/H					3393			981			109			2602			1709				378			4786

ROOM USE				LV/DN			KT/BR			HALL			LAUN			PWD			FOY			WOB			BAS		
EXP. WALL				35			38			30			18			12			27			50			28		
CLG. HT.				10			10			11			11			10			10			9			9		
	FACTORS																										
GRS.WALL AREA	LOSS	GAIN		347			377			327			196			119			268			425			182		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	18.6	14.4		0	0	0	0	0	16	297	231	0	0	0	0	0	0	0	0	0	50	928	722	10	186	144
EAST	18.6	38.5		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	18.6	22.8		30	557	685	0	0	0	0	0	0	0	0	7	130	160	0	0	0	0	0	0	0	0	0
WEST	18.6	38.5		0	0	0	52	965	2005	0	0	0	11	204	424	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	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
DOORS	24.7	3.7		0	0	0	16	394	58	20	493	73	0	0	0	0	0	0	40	986	146	0	0	0	20	493	73
NET EXPOSED WALL	3.5	0.5		317	1114	165	309	1085	161	291	1024	152	185	652	97	112	394	58	228	800	119	375	1319	195	0	0	0
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	56	197	29
EXPOSED CLG	1.3	0.6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2		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	2.5	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						1026	
SLAB ON GRADE HEAT LOSS					0			0			0			0			0			0			2230				
SUBTOTAL HT LOSS					1671			2444			1814			856			523			1788			4476			1901	
SUB TOTAL HT GAIN						851			2224			456			521			218			265			917			247
LEVEL FACTOR / MULTIPLIER				0.30	0.34		0.30	0.34		0.30	0.34		0.30	0.34		0.30	0.34		0.30	0.34					0.50	0.81	
AIR CHANGE HEAT LOSS					570			835			619			292			179			610						5176	
AIR CHANGE HEAT GAIN						47			122			25			28			12			14							64
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						548			548			0			548			0			0			0				548
TOTAL HT LOSS BTU/H					2241			3279			2434			1148			702			2396			4476			7077	
TOTAL HT GAIN x 1.3 BTU/H						1878			3761			625			1426			299			363			1192			1115

TOTAL HEAT GAIN BTU/H: 24807 | TONS: 2.07 | LOSS DUE TO VENTILATION LOAD BTU/H: 1274 | STRUCTURAL HEAT LOSS: 35898 | TOTAL COMBINED HEAT LOSS BTU/H: 37173

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

TYPE: BARTON 1 | DATE: Jun-19 | GFA: 2402 | LO# 82654

HEATING CFM	890	COOLING CFM	890
TOTAL HEAT LOSS	35,898	TOTAL HEAT GAIN	24,618
AIR FLOW RATE CFM	24.79	AIR FLOW RATE CFM	36.15

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
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

#GOODMAN
GMEC960402BNA 40

FAN SPEED	
LOW	
MEDLOW	
MEDIUM	
MEDIUM HIGH	
HIGH	890

AFUE = 96 %
INPUT (BTU/H) = 40,000
OUTPUT (BTU/H) = 38,400

DESIGN CFM = 890
CFM @ .6 " E.S.P.

TEMPERATURE RISE 40 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	9	7	4
R/A	0	0	3	1	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	7	8	9	10	13	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BATH	FAM	FAM	MBR	LV/DN	KT/BR	KT/BR	HALL	LAUN	PWD	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.02	1.53	0.40	1.85	0.98	0.73	2.30	2.30	1.02	2.24	1.64	1.64	2.43	1.15	0.70	2.40	2.89	2.89	2.89	2.89
CFM PER RUN HEAT	25	38	10	46	24	18	57	57	25	56	41	41	60	28	17	59	72	72	72	72
RM GAIN MBH.	1.70	0.98	0.11	2.60	1.71	0.38	2.39	2.39	1.70	1.88	1.88	1.88	0.63	1.43	0.30	0.36	0.58	0.58	0.58	0.58
CFM PER RUN COOLING	61	35	4	94	62	14	87	87	61	68	68	68	23	52	11	13	21	21	21	21
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	42	54	39	52	22	40	41	34	55	18	35	43	37	49	25	28	28	39	7	31
EQUIVALENT LENGTH	150	140	160	160	140	180	190	180	210	140	100	130	120	150	120	100	110	160	120	110
TOTAL EFFECTIVE LENGTH	192	194	199	212	162	220	231	214	265	158	135	173	157	199	145	128	138	199	127	141
ADJUSTED PRESSURE	0.09	0.09	0.09	0.08	0.11	0.08	0.07	0.08	0.06	0.11	0.13	0.1	0.11	0.09	0.12	0.13	0.12	0.09	0.14	0.12
ROUND DUCT SIZE	6	4	4	6	5	4	6	6	6	5	5	5	5	5	4	5	5	5	5	5
HEATING VELOCITY (ft/min)	127	436	115	235	176	207	291	291	127	411	301	301	441	206	195	433	529	529	529	529
COOLING VELOCITY (ft/min)	311	402	46	479	455	161	444	444	311	499	499	499	169	382	126	95	154	154	154	154
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	B	A	A	C	B	C	C	C	A	C	B	A	A	A	C	C	B	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	

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	274	0.06	9.3	10	x	8	493	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	508	0.06	11.7	16	x	8	572	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	382	0.07	10.1	12	x	8	573	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	0	0.00	0	0	x	8	0	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												BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	150	130	130	340	0	0	0	0	0	0	0	0	0	0	0	140
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.	47	37	47	29	1	1	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	190	140	135	185	0	0	0	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	237	177	182	214	1	1	1	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.06	0.08	0.08	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
ROUND DUCT SIZE	7.4	6.5	6.5	9.7	0	0	0	0	0	0	0	0	0	0	0	6.3
INLET GRILL SIZE	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
INLET GRILL SIZE	14	14	14	30	0	0	0	0	0	0	0	0	0	0	0	14

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (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	890	0.06	14.4	24	x	8	668
TRUNK Y	490	0.06	11.5	16	x	8	551
TRUNK Z	0	0.06	0	0	x	8	0
DROP	890	0.06	14.4	24	x	10	534

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

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

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TYPE: BARTON 1 LO # 82654
SITE NAME: LAMBERT'S LANE PH.2

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	2	@ 10.6 cfm	21.2	cfm
Kitchen & Bathrooms	4	@ 10.6 cfm	42.4	cfm
Other Rooms	5	@ 10.6 cfm	53.0	cfm
Table 9.32.3.A.		TOTAL	159.0	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	63.6	cfm

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	159	cfm
Less Principal Ventil. Capacity	63.6	cfm
Required Supplemental Capacity	95.4	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 65H Location: BSMT

63.6 cfm 3.0 sones [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
63.6 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
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: June-19

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

HVAC DESIGNS LTD.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 82654 Model: BARTON 1 Builder: GREENPARK HOMES Date: 6/6/2019

Volume Calculation

House Volume

Level	Floor Area (ft^2)	Floor Height (ft)	Volume (ft^3)
Bsmt	1047	9	8899.5
First	1047	10	10375.77
Second	1355	8	10948.4
Third	0	9	0
Fourth	0	9	0
		Total:	30,223.7 ft^3
		Total:	855.8 m^3

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.258
SUMMER NATURAL AIR CHANGE RATE	0.084

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

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

0.258 x 237.73 x 41 °C x 1.2 = 3034 W

= 10351 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

= 0.084 x 237.73 x 6 °C x 1.2 = 146 W

= 499 Btu/h

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

64 CFM x 74 °F x 1.08 x 0.25 = 1274 Btu/h

6.2.7 Sensible heat Gain due to Ventilation

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

64 CFM x 11 °F x 1.08 x 0.25 = 189 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	10,351	6,377	0.812
2	0.3		9,095	0.341
3	0.2		9,657	0.214
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

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

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

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: BARTON 1 **BUILDER:** GREENPARK HOMES
SFQT: 2402 **LO#** 82654 **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 (ft^3):	30223.7	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.5 ft
LENGTH: 52.0 ft	WIDTH: 28.0 ft	EXPOSED PERIMETER:	28.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	132.0 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	-

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INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

Michael O'Rourke

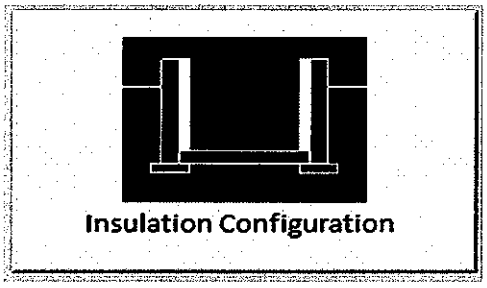
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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):	18.9	
Floor Width (m):	8.5	
Exposed Perimeter (m):	8.5	
Wall Height (m):	2.6	
Depth Below Grade (m):	1.85	
Window Area (m^2):	0.9	
Door Area (m^2):	1.9	


Insulation Configuration

Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	**301**	

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TYPE: BARTON 1
LO# 82654

HVAC Designs Ltd.
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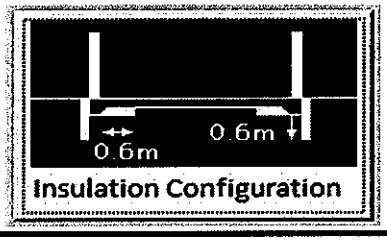
905-619-2300

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		
Length (m):	15.8	
Width (m):	8.5	
Exposed Perimeter (m):	40.2	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):	**653**	

Insulation Configuration

TYPE: BARTON 1
LO# 82654

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HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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):	8.07		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m^3):	855.8		
Air Leakage/Ventilation			
Air Tightness Type:	Energy Star Detached (2.5 ACH)		
Custom BDT Data:	ELA @ 10 Pa.		798.9 cm^2
	2.50		ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply		Total Exhaust
	30.0		30.0
Flue Size			
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	**0.258**		
Cooling Air Leakage Rate (ACH/H):	**0.084**		

TYPE: BARTON 1
LO# 82654

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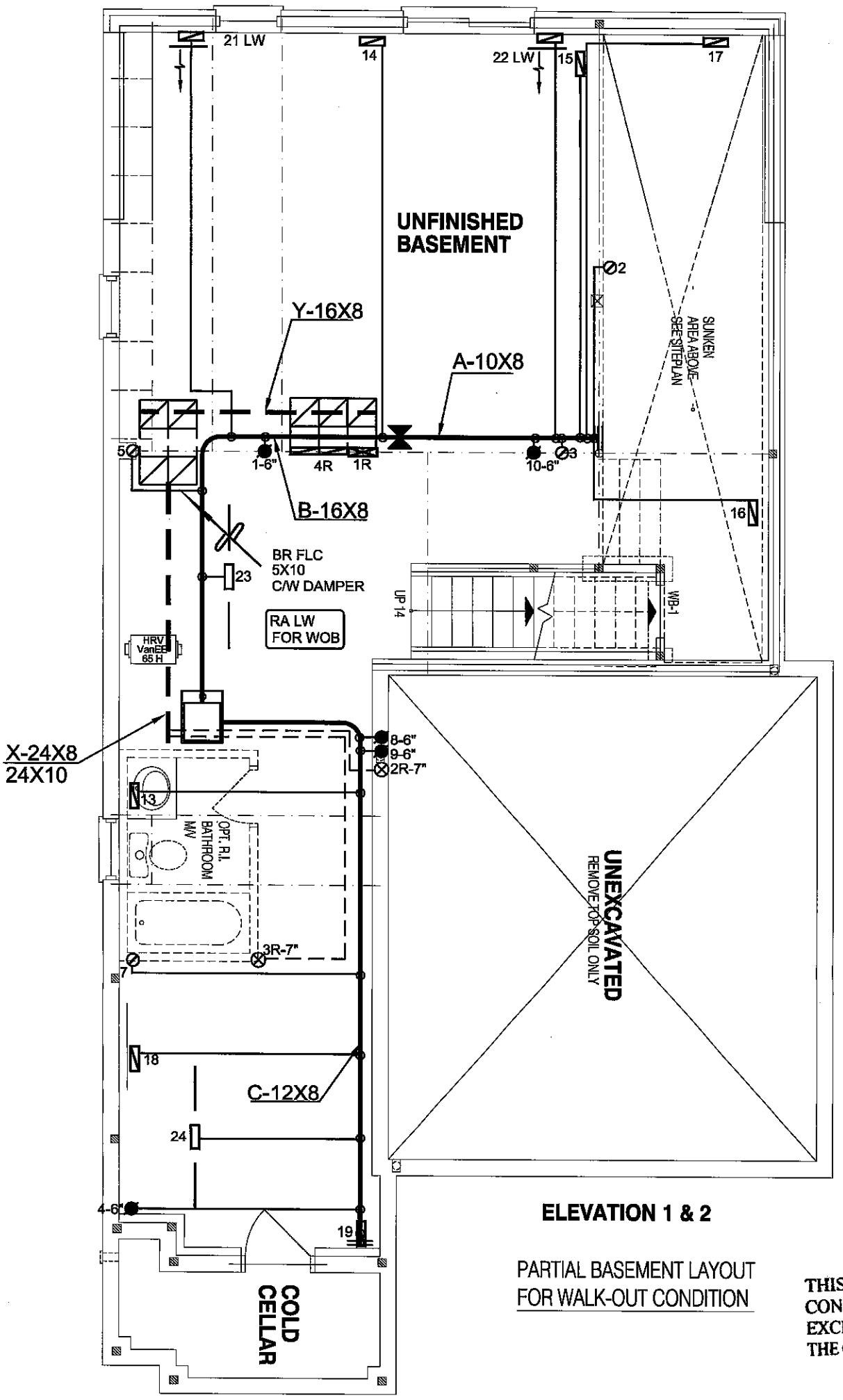

ELEVATION 1 & 2

PARTIAL BASEMENT LAYOUT
FOR WALK-OUT CONDITION

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

CERTIFIED MODEL
PRE-APPROVED
FOR PERMIT APPLICATION AS PER THE ONTARIO BUILDING CODE
TOWN OF CALEDON BUILDING DIVISION
REVIEWED BY (SA)
DATE June 21, 2019
FILE # CMOD-BARTON1-WOB
(ELEVATION 1&2)

RECEIVED
JUN 10 2019
TOWN OF CALEDON
BUILDING SECTION
FILE NO

WOB
CSA-F280-12
ENERGY STAR

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.

HVAC LEGEND

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

No.	Description	Date
3.		
2.		
1.		

REVISIONS

Client
GREENPARK HOMES

Project Name
LAMBERTS LANE HOME CORP PH 2
CALEDON, ONTARIO

BARTON 1 WOB 2402 sqft

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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 37173 BTU/H	
UNIT DATA	
MAKE	GOODMAN
MODEL	GMEC960402BNA
INPUT	40 MBTU/H
OUTPUT	38.4 MBTU/H
COOLING	2.0 TONS
FAN SPEED	890 cfm @ 0.6" w.c.

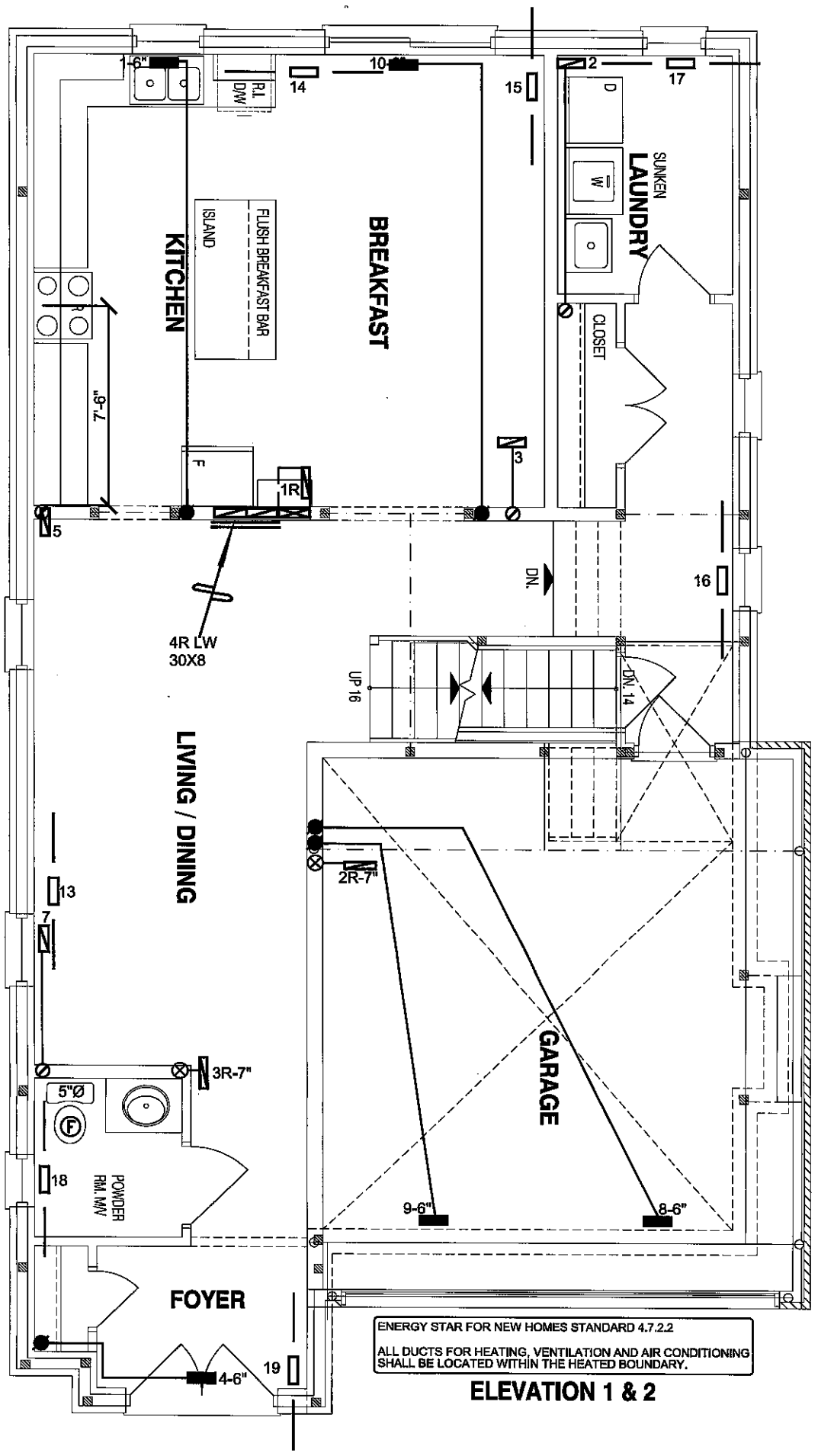
# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	9	3	2
1ST FLOOR	7	1	2
BASEMENT	4	1	0

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

Sheet Title
BASEMENT HEATING LAYOUT

Date JUNE/2019
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 82654

APPLICANT COPY



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

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

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

RECEIVED
JUN 10 2019
TOWN OF CALEDON
BUILDING SECTION
FILE NO

WOB
CSA-F280-12
energy
ENERGY STAR

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

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SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
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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
▭	SUPPLY AIR BOOT ABOVE	●	6" SUPPLY AIR STACK 2nd FLOOR	▬	FRA- FLOOR RETURN AIR GRILLE	⧗	REDUCER

No.	Description	Date
3.		
2.		
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REVISIONS

Client
GREENPARK HOMES

Project Name
LAMBERTS LANE HOME CORP PH 2
CALEDON, ONTARIO

BARTON 1 WOB 2402 sqft

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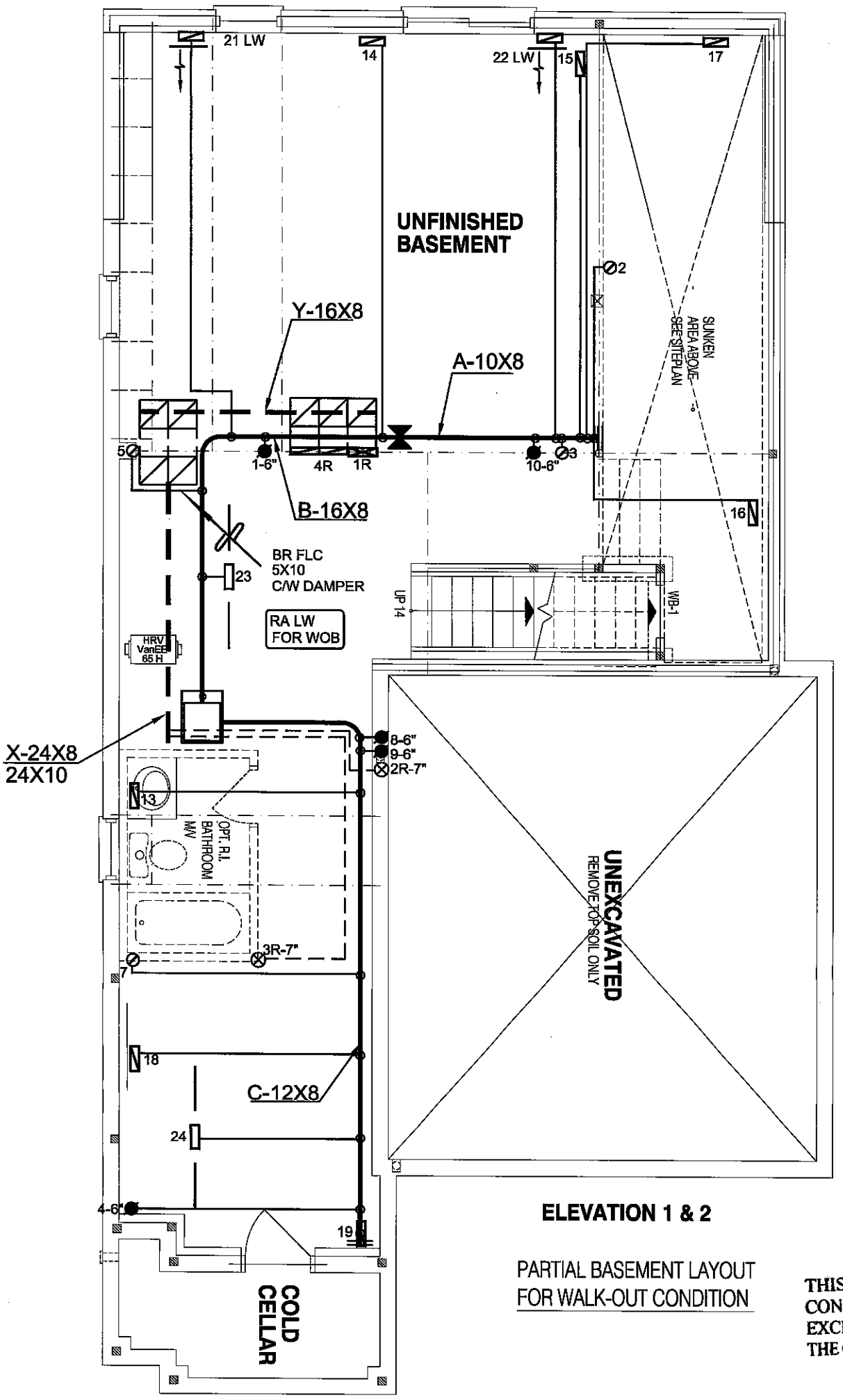
Sheet Title
FIRST FLOOR HEATING LAYOUT

Date JUNE/2019
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 82654



ELEVATION 1 & 2

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Sheet Title
BASEMENT HEATING LAYOUT

Date JUNE/2019
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 82654

APPLICANT COPY