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

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

SITE NAME: LAMBERT'S LANE PH.2 — DATE: Jun-19 — WINTER NATURAL AIR CHANGE RATE 0.278 — HEAT LOSS AT °F. 74 — CSA-F280-12
BUILDER: GREENPARK HOMES — TYPE: HORIZON 3ES — GFA: 1877 — LO# 81377 — SUMMER NATURAL AIR CHANGE RATE 0.087 — HEAT GAIN AT °F. 11 — ENERGYSTAR

ROOM USE			MBR			ENS			WIC			BED-3			BED-2				BATH					
EXP. WALL			28			6			9			13			29				8					
CLG. HT.			9			9			9			9			9				9					
	FACTORS																							
GRS.WALL AREA	LOSS	GAIN	252			54			81			117			261				72					
GLAZING				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			
EAST	18.6	40.7	0	0	0	0	0	0	0	0	0	16	297	651	24	445	977		0	0	0			
SOUTH	18.6	24.1	13	241	313	0	0	0	8	148	193	0	0	0	18	334	433		8	148	193			
WEST	18.6	40.7	30	557	1222	11	204	448	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			
DOORS	24.7	3.7	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	209	735	109	43	151	22	73	257	38	101	355	53	219	770	114		64	225	33			
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			
EXPOSED CLG	1.3	0.6	195	244	109	78	98	43	35	44	20	180	226	100	174	218	97		132	165	74			
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	20	54	24	0	0	0	24	64	29		10	27	12			
EXPOSED FLOOR	2.5	0.4	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				
SLAB ON GRADE HEAT LOSS				0			0			0			0			0				0				
SUBTOTAL HT LOSS				1777			453			503			878			1832				566				
SUB TOTAL HT GAIN					1752			514			274			804			1650				311			
LEVEL FACTOR / MULTIPLIER			0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32			0.20	0.32				
AIR CHANGE HEAT LOSS				560			143			158			277			578				178				
AIR CHANGE HEAT GAIN					101			30			16			46			95				18			
DUCT LOSS				0			0			0			0			0				0				
DUCT GAIN					0			0			0			0			0				0			
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240		0		0			
HEAT GAIN APPLIANCES/LIGHTS					704			0			0			704			704				0			
TOTAL HT LOSS BTU/H				2337			596			661			1154			2409				744				
TOTAL HT GAIN x 1.3 BTU/H					3947			706			377			2333			3495				428			

ROOM USE			LV/DN				KT/GR				LAUN				FOY				BAS		
EXP. WALL			33				55				0				6				93		
CLG. HT.			10				10				9				10				9		
	FACTORS																				
GRS.WALL AREA	LOSS	GAIN	330				550				0				60				605		
GLAZING				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		15	278	227
EAST	18.6	40.7	41	761	1669		0	0	0		0	0	0		7	130	285		0	0	0
SOUTH	18.6	24.1	27	501	650		14	260	337		0	0	0		0	0	0		0	0	0
WEST	18.6	40.7	0	0	0		45	835	1832		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
DOORS	24.7	3.7	0	0	0		20	493	73		0	0	0		20	493	73		20	493	73
NET EXPOSED WALL	3.5	0.5	262	921	137		471	1656	246		0	0	0		33	116	17		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		233	817	121
EXPOSED CLG	1.3	0.6	0	0	0		0	0	0		112	140	62		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
EXPOSED FLOOR	2.5	0.4	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0
BASEMENT/CRAWL HEAT LOSS				0				0				0				0				2890	
SLAB ON GRADE HEAT LOSS				0				0				0				0					
SUBTOTAL HT LOSS				2183				3244				140				739				4478	
SUB TOTAL HT GAIN					2456				2488				62				375				421
LEVEL FACTOR / MULTIPLIER			0.30	0.47			0.30	0.47			0.20	0.32			0.30	0.47			0.50	1.06	
AIR CHANGE HEAT LOSS				1030				1530				44				349				4847	
AIR CHANGE HEAT GAIN					141				143				4				22				24
DUCT LOSS				0				0				0				0				0	
DUCT GAIN					0				0				0				0				0
HEAT GAIN PEOPLE	240		0		0		0		0		0		0		0		0		0		0
HEAT GAIN APPLIANCES/LIGHTS					704				704				704				0				704
TOTAL HT LOSS BTU/H				3212				4774				185				1087				9324	
TOTAL HT GAIN x 1.3 BTU/H					4291				4335				1000				516				1494

TOTAL HEAT GAIN BTU/H: 23110 — TONS: 1.93 — LOSS DUE TO VENTILATION LOAD BTU/H: 1274 — STRUCTURAL HEAT LOSS: 26484 — TOTAL COMBINED HEAT LOSS BTU/H: 27759

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

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

TYPE: HORIZON 3ES DATE: Jun-19 GFA: 1877 LO# 81377

HEATING CFM	895	COOLING CFM	895
TOTAL HEAT LOSS	26,484	TOTAL HEAT GAIN	22,921
AIR FLOW RATE CFM	33.79	AIR FLOW RATE CFM	39.05

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
GMEC960302BNA 30
FAN SPEED
LOW
MEDLOW
MEDIUM
MEDIUM HIGH 557
HIGH 895

AFUE = 96 %
INPUT (BTU/H) = 30,000
OUTPUT (BTU/H) = **28,800**
DESIGN CFM = **895**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 30 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	9	5	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	6	7	10	12	13	14	15	17	19	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-3	BED-2	BED-2	BATH	MBR	LV/DN	LV/DN	KT/GR	KT/GR	LAUN	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.17	0.60	0.66	1.15	1.20	1.20	0.74	1.17	1.61	1.61	2.39	2.39	0.18	1.09	2.33	2.33	2.33	2.33
CFM PER RUN HEAT	39	20	22	39	41	41	25	39	54	54	81	81	6	37	79	79	79	79
RM GAIN MBH.	1.97	0.71	0.38	2.33	1.75	1.75	0.43	1.97	2.15	2.15	2.17	2.17	1.00	0.52	0.37	0.37	0.37	0.37
CFM PER RUN COOLING	77	28	15	91	68	68	17	77	84	84	85	85	39	20	15	15	15	15
ADJUSTED PRESSURE	0.17	0.17	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	0.17	0.17	0.17
ACTUAL DUCT LGH.	35	46	29	52	40	45	31	43	23	30	20	27	26	34	26	17	10	22
EQUIVALENT LENGTH	170	110	190	160	160	170	170	190	100	100	170	110	220	130	100	120	170	110
TOTAL EFFECTIVE LENGTH	205	156	219	212	200	215	201	233	123	130	190	137	246	164	126	137	180	132
ADJUSTED PRESSURE	0.08	0.11	0.08	0.08	0.09	0.08	0.09	0.07	0.13	0.12	0.09	0.12	0.07	0.1	0.14	0.13	0.1	0.13
ROUND DUCT SIZE	**6**	4	4	**6**	5	5	4	**6**	**6**	**6**	**6**	**6**	5	4	5	5	5	5
HEATING VELOCITY (ft/min)	199	229	252	199	301	301	287	199	275	275	413	413	44	424	580	580	580	580
COOLING VELOCITY (ft/min)	393	321	172	464	499	499	195	393	428	428	433	433	286	229	110	110	110	110
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	A	C	B	C	C	C	A	B	B	A	A	A	B	A	A	C	B

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	

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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	424	0.07	10.5	14	x	8	545	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	263	0.08	8.5	8	x	8	592	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	471	0.08	10.6	14	x	8	606	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 TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK O	0	0.07	0	0	x	8	0
TRUNK P	0	0.07	0	0	x	8	0
TRUNK Q	0	0.07	0	0	x	8	0
TRUNK R	0	0.07	0	0	x	8	0
TRUNK S	0	0.07	0	0	x	8	0
TRUNK T	0	0.07	0	0	x	8	0
TRUNK U	0	0.07	0	0	x	8	0
TRUNK V	0	0.07	0	0	x	8	0
TRUNK W	0	0.07	0	0	x	8	0
TRUNK X	745	0.07	13	22	x	8	610
TRUNK Y	595	0.07	11.9	16	x	8	669
TRUNK Z	0	0.07	0	0	x	8	0
DROP	895	0.07	13.9	24	x	10	537

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	150	85	360	0	0	0	0	0	0	0	0	0	0	0	150
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.	34	35	42	23	1	1	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	150	145	185	190	0	0	0	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	184	180	227	213	1	1	1	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.08	0.08	0.07	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	6.9	6.9	5.8	9.9	0	0	0	0	0	0	0	0	0	0	0	6.5
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

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

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TYPE: HORIZON 3ES LO # 81377
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	4	@ 10.6 cfm	42.4	cfm
Table 9.32.3.A.		TOTAL	148.4	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

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SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	148.4	cfm
Less Principal Ventil. Capacity	63.6	cfm
Required Supplemental Capacity	84.8	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

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.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 81377 Model: HORIZON 3ES Builder: GREENPARK HOMES Date: 6/26/2019

Volume Calculation

House Volume

Level	Floor Area (ft^2)	Floor Height (ft)	Volume (ft^3)
Bsmt	938	9	8442
First	938	10	9380
Second	938	9	8442
Third	0	9	0
Fourth	0	9	0
		Total:	26,264.0 ft^3
		Total:	743.7 m^3

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.278
SUMMER NATURAL AIR CHANGE RATE	0.087

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

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

0.278 x 206.59 x 41 °C x 1.2 = 2841 W

= 9693 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

= 0.087 x 206.59 x 6 °C x 1.2 = 132 W

= 450 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	9,693	4,478	1.082
2	0.3		6,165	0.472
3	0.2		6,148	0.315
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

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: HORIZON 3ES **BUILDER:** GREENPARK HOMES
SFQT: 1877 **LO#** 81377 **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:	ATTACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.00	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	26264.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.75	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.5 ft
LENGTH: 44.0 ft	WIDTH: 23.0 ft	EXPOSED PERIMETER:	93.0 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

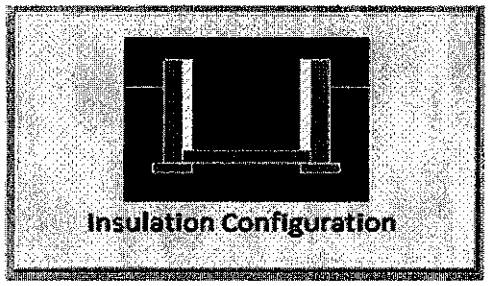
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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):	**13.4**	
Floor Width (m):	**7.0**	
Exposed Perimeter (m):	**28.3**	
Wall Height (m):	**2.7**	
Depth Below Grade (m):	**1.98**	
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):	**847**	

TYPE: HORIZON 3ES
LO# 81377

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

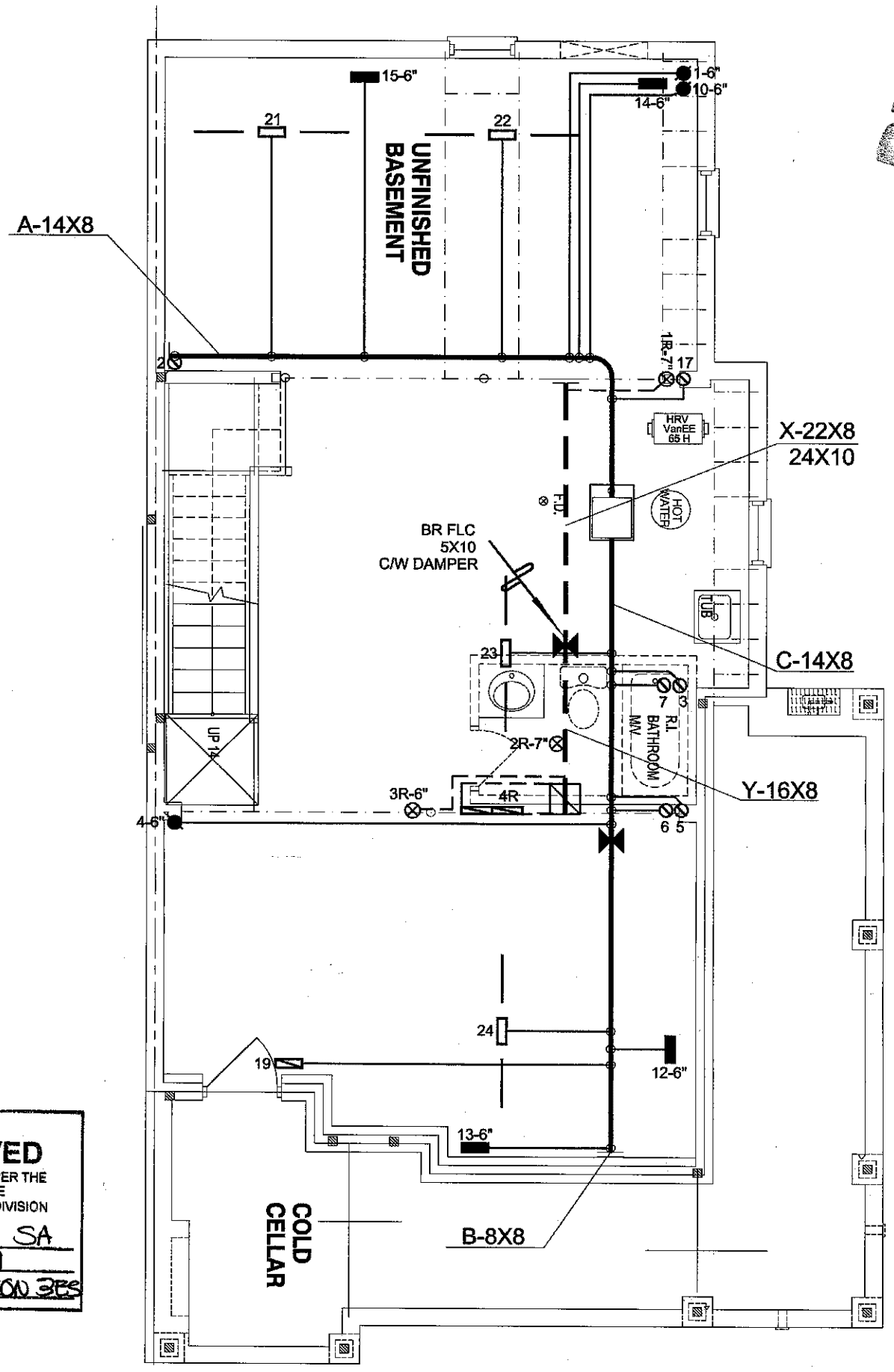
Air Infiltration Residential Load Calculator

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):	6.55
Building Configuration	
Type:	Semi
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	743.7
Air Leakage/Ventilation	
Air Tightness Type:	Energy Star Attached (3.0 ACH)
Custom BDT Data:	ELA @ 10 Pa. 833.1 cm^2
	3.00 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply: 30.0 Total Exhaust: 30.0
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.278**
Cooling Air Leakage Rate (ACH/H):	**0.087**

TYPE: HORIZON 3ES
LO# 81377

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



ELEV-1

RECEIVED
JUL 11 2019
TOWN OF CALEDON
BUILDING SECTION
FILE NO

CERTIFIED MODEL
PRE-APPROVED
FOR PERMIT APPLICATION AS PER THE
ONTARIO BUILDING CODE
TOWN OF CALEDON BUILDING DIVISION
REVIEWED BY SA
DATE July 30, 2019
FILE # CMOD - HORIZON 3ES
(ELEVATION 1)

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

MINIMUM CEILING HEIGHT SHALL BE 2100 MM OVER AT LEAST 75% OF BASEMENT AREA EXCEPT THAT UNDER BEAMS AND DUCTS THE CLEARANCE IS PERMITTED TO BE REDUCED 1950 M M

ENERGY STAR
CSA-F280-12

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, BCIN# 19669
HVAC DESIGNS LTD.

HVAC LEGEND

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

HORIZON 3ES 1877 sqft

HVAC DESIGNS LTD.
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

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.

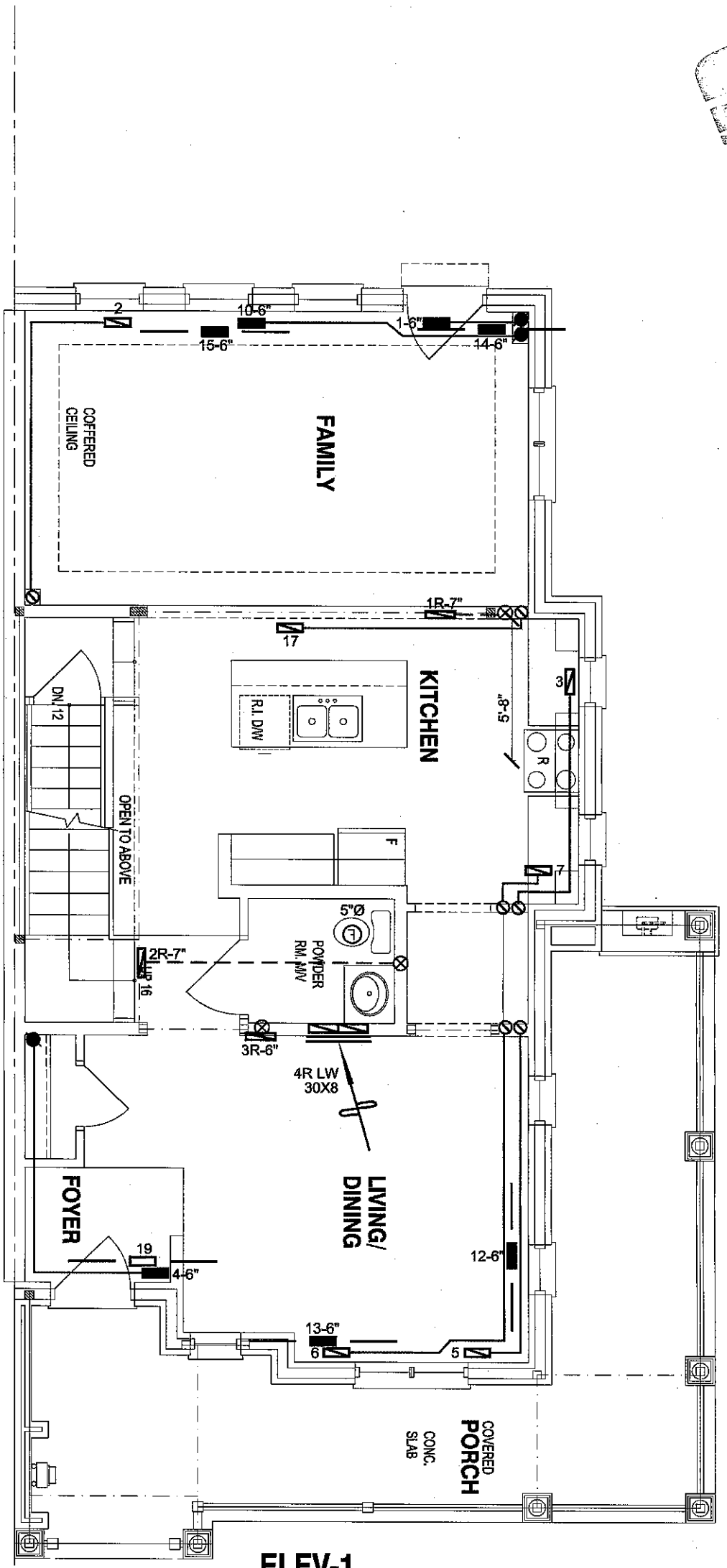
HEAT LOSS 27759 BTU/H	
UNIT DATA	
MAKE	GOODMAN
MODEL	GMEC960302BNA
INPUT	30 MBTU/H
OUTPUT	28.8 MBTU/H
COOLING	2.0 TONS
FAN SPEED	895 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	9	3	3
1ST FLOOR	5	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 FEB/2019
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 81377



ELEV-1

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

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HVAC DESIGNS LTD.

ENERGY STAR
CSA-F280-12

HVAC LEGEND

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	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

HORIZON 3ES 1877 sqft

HVAC DESIGNS LTD.
375 Finley Ave - Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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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.

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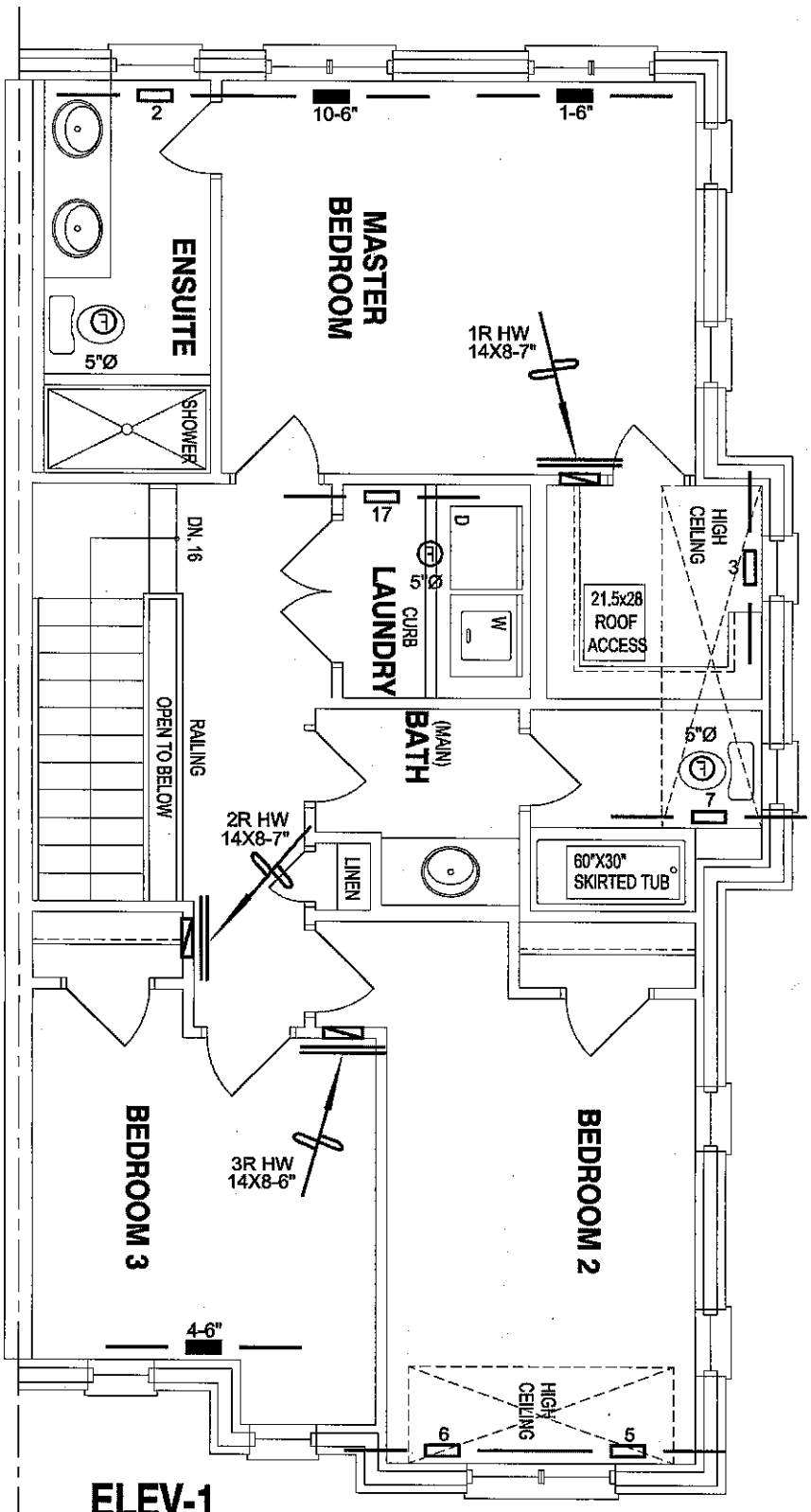
Sheet Title
FIRST FLOOR HEATING LAYOUT

Date FEB/2019
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 81377



ELEV-1

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

ENERGY STAR
CSA-F280-12

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
— ▭ —	FLOOR SUPPLY AIR GRILLE	▬	6" SUPPLY AIR BOOT ABOVE	▭	14"x8" RETURN AIR GRILLE	▭	RETURN AIR STACK ABOVE
— ▬ —	FLOOR 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

HORIZON 3ES 1877 sqft

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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date FEB/2019
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 81377