HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
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THIS STRUCTURE MUST BE CONSTRUCTED TO MEET OR EXCEED THE PROVISIONS OF THE ONTARIO BUILDING CODE

SITE NAME: LAMBERT'S LANE PH.2 | OPT 5 BED | DATE: Jul-19 | WINTER NATURAL AIR CHANGE RATE 0.242 | HEAT LOSS ΔT °F. 74 | CSA-F280-12
BUILDER: GREENPARK HOMES | TYPE: PRESTON 1 | GFA: 2507 | LO# 81348 | SUMMER NATURAL AIR CHANGE RATE 0.079 | HEAT GAIN ΔT °F. 11 | ENERGYSTAR

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			BATH			BED-5				ENS-2				
EXP. WALL			31			25			9			26			38			11			6			11				6				
CLG. HT.			8			8			8			8			8			8			8			8				8				
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	251			202			73			210			307			89			48			89				48				
GLAZING			LOSS	GAIN		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	8	148	121	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	30	557	1222	30	557	1222	0	0	0	0	0	0	0	0	0		0	0	0		
SOUTH	18.6	24.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	297	385	7	130	168	16	297	385		0	0	0		
WEST	18.6	40.7	32	594	1303	16	297	651	0	0	0	0	0	0	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	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	0	0	0		0	0	0		
NET EXPOSED WALL	3.5	0.5	219	769	114	186	654	97	65	228	34	180	634	94	277	975	144	73	256	38	41	146	22	73	256	38		48	171	25		
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		0	0	0		
EXPOSED CLG	1.3	0.6	234	293	130	154	193	86	162	203	90	143	179	80	169	212	94	150	188	84	72	90	40	143	179	80		66	83	37		
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	26	70	31	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	143	356	53	0	0	0	0	0	0	0	0	0	0	0	0		66	164	24		
BASEMENT/CRAWL HEAT LOSS			0			0			0			0			0			0			0			0				0				
SLAB ON GRADE HEAT LOSS			0			0			0			0			0			0			0			0				0				
SUBTOTAL HT LOSS			1656			1144			579			1725			1813			741			366			732				418				
SUB TOTAL HT GAIN				1547			834			245			1448			1491			507			230			503				86			
LEVEL FACTOR / MULTIPLIER			0.20	0.20		0.20	0.20		0.20	0.20		0.20	0.20		0.20	0.20		0.20	0.20		0.20	0.20		0.20	0.20			0.20	0.20			
AIR CHANGE HEAT LOSS				327			226			114			341			358			146			72			145				82			
AIR CHANGE HEAT GAIN					83			45			13			78			80			27			12			27				5		
DUCT LOSS				0			0			0			207			0			0			0			0				50			
DUCT GAIN					0			0			0			226			0			0			0			0				9		
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0	1		240		0		0		
HEAT GAIN APPLIANCES/LIGHTS					490			0			0			490			490			490			0			490				0		
TOTAL HT LOSS BTU/H				1982			1370			693			2273			2171			888			438			877				550			
TOTAL HT GAIN x 1.3 BTU/H					3381			1143			336			3226			2992			1643			315			1638				130		

ROOM USE			LV/DN				KIT			FAM			LAUN			W/R			FOY			MUD					WOD			BAS		
EXP. WALL			40				39			36			12			14			18			25					40			168		
CLG. HT.			10				10			10			8			10			10			10					9			9		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	400				390			360			97			140			180			250					360			1128		
GLAZING			LOSS	GAIN			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	8	148	121	0	0	0	0	0	0	10	186	151			0	0	0	0	0	0
EAST	18.6	40.7	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	6	111	244	0	0	0			0	0	0	0	0	0
SOUTH	18.6	24.1	28	519	674		0	0	0	0	0	0	0	0	0	9	167	217	0	0	0	0	0	0			0	0	0	8	148	193
WEST	18.6	40.7	0	0	0		66	1224	2687	28	519	1140	0	0	0	0	0	0	0	0	0	0	0	0			12	223	489	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	0	0	0	0
DOORS	24.7	3.7	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	40	986	146	20	493	73			0	0	0	20	493	73
NET EXPOSED WALL	3.5	0.5	372	1308	194		324	1139	169	332	1168	173	89	313	46	131	461	68	134	471	70	220	774	115			0	0	0	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			228	801	119	384	1349	200
EXPOSED CLG	1.3	0.6	0	0	0		0	0	0	0	0	0	216	271	120	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	10	27	12	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	216	538	80	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								5779		
SLAB ON GRADE HEAT LOSS			0				0			0			0			0			0			0					0					
SUBTOTAL HT LOSS			1828				2364			1714			1270			628			1569			1452					1024			7770		
SUB TOTAL HT GAIN				868				2856			1325			368			285			460			339						607			466
LEVEL FACTOR / MULTIPLIER			0.30	0.32			0.30	0.32		0.30	0.32		0.20	0.20		0.30	0.32		0.30	0.32		0.30	0.32							0.50	0.59	
AIR CHANGE HEAT LOSS				592				765			555			251			203			508			470							5156		
AIR CHANGE HEAT GAIN					47				154			71			20			15			25			18								58
DUCT LOSS				0				0			0			152			0			0			0							0		
DUCT GAIN					0				0			0			88			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		0
HEAT GAIN APPLIANCES/LIGHTS					490				490			490			490			0			0			490					0			490
TOTAL HT LOSS BTU/H				2419				3129			2269			1673			831			2076			1922					1024			12926	
TOTAL HT GAIN x 1.3 BTU/H					1826				4550			2452			1255			390			631			1101					790			1317

TOTAL HEAT GAIN BTU/H: 29400 | TONS: 2.45 | LOSS DUE TO VENTILATION LOAD BTU/H: 1911 | STRUCTURAL HEAT LOSS: 39511 | TOTAL COMBINED HEAT LOSS BTU/H: 41422

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

RECEIVED
JUL 26 2019
TOWN OF CALEDON
BUILDING SECTION
FILE NO

HVAC DESIGNS LTD.

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

OPT 5 BED
TYPE: PRESTON 1

DATE: Jul-19

GFA: 2507 LO# 81348

HEATING CFM 1131
TOTAL HEAT LOSS 39,511
AIR FLOW RATE CFM 28.62

COOLING CFM 1131
TOTAL HEAT GAIN 29,116
AIR FLOW RATE CFM 38.84

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
GMEC960603BNA 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 @ .6 " E.S.P.

TEMPERATURE RISE 47 °F

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

RUN #	1	2	3	4	5	6	7	8	9	10	11	12
ROOM NAME	MBR	MBR	BED-5	BED-2	BED-3	BATH	BED-4	BED-2	BED-3	MBR	LAUN	LV/DN
RM LOSS MBH.	0.66	0.66	0.88	1.14	1.09	0.44	0.89	1.14	1.09	0.66	1.67	2.42
CFM PER RUN HEAT	19	19	25	33	31	13	25	33	31	19	48	69
RM GAIN MBH.	1.13	1.13	1.64	1.61	1.50	0.32	1.64	1.61	1.50	1.13	1.25	1.83
CFM PER RUN COOLING	44	44	64	63	58	12	64	63	58	44	49	71
ADJUSTED PRESSURE	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.	61	73	48	48	35	37	41	50	28	51	41	13
EQUIVALENT LENGTH	140	190	190	190	130	220	210	160	140	150	180	190
TOTAL EFFECTIVE LENGTH	201	263	238	238	165	257	251	210	168	201	221	203
ADJUSTED PRESSURE	0.09	0.07	0.07	0.07	0.1	0.07	0.07	0.08	0.1	0.09	0.08	0.08
ROUND DUCT SIZE	5	5	5	5	5	4	5	5	5	5	5	5
HEATING VELOCITY (ft/min)	140	140	184	242	228	149	184	242	228	140	352	507
COOLING VELOCITY (ft/min)	323	323	470	463	426	138	470	463	426	323	360	521
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	A	B	B	C	B	B	B	C	A	B	C

RUN #	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	KIT	KIT	FAM	FAM	WIC	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.56	1.56	1.13	1.13	0.69	0.83	2.08	1.92	3.49	3.49	3.49	3.49
CFM PER RUN HEAT	45	45	32	32	20	24	59	55	100	100	100	100
RM GAIN MBH.	2.28	2.28	1.23	1.23	0.34	0.39	0.63	1.10	0.53	0.53	0.53	0.53
CFM PER RUN COOLING	88	88	48	48	13	15	24	43	20	20	20	20
ADJUSTED PRESSURE	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	41	45	52	42	47	20	30	36	36	47	23	17
EQUIVALENT LENGTH	170	170	190	160	150	150	150	160	160	210	160	170
TOTAL EFFECTIVE LENGTH	211	215	242	202	197	170	180	196	196	257	183	187
ADJUSTED PRESSURE	0.08	0.08	0.07	0.09	0.09	0.1	0.1	0.09	0.08	0.06	0.09	0.09
ROUND DUCT SIZE	6	6	5	5	4	4	5	5	6	6	6	6
HEATING VELOCITY (ft/min)	229	229	235	235	229	275	433	404	510	510	510	510
COOLING VELOCITY (ft/min)	449	449	352	352	149	172	176	316	102	102	102	102
OUTLET GRILL SIZE	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	A	A	A	B	C	C	B	A	A	B	C

RUN #	28
ROOM NAME	ENS-2
RM LOSS MBH.	0.55
CFM PER RUN HEAT	16
RM GAIN MBH.	0.13
CFM PER RUN COOLING	5
ADJUSTED PRESSURE	0.17
ACTUAL DUCT LGH.	34
EQUIVALENT LENGTH	190
TOTAL EFFECTIVE LENGTH	224
ADJUSTED PRESSURE	0.08
ROUND DUCT SIZE	4
HEATING VELOCITY (ft/min)	184
COOLING VELOCITY (ft/min)	57
OUTLET GRILL SIZE	3X10
TRUNK	B

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

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	411	0.06	10.8	14	x	8	528	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	779	0.06	13.7	24	x	8	584	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	314	0.08	9.1	10	x	8	565	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	0.05	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	400	0.05	11.2	14	x	8	514
TRUNK Z	0	0.05	0	0	x	8	0
DROP	1131	0.05	16.5	24	x	10	679

RETURN AIR #	1	2	3	4	5	6										BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	130	135	130	95	310	135	0	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	0.15
ACTUAL DUCT LGH.	61	48	49	47	40	71	1	1	1	1	1	1	1	1	1	18
EQUIVALENT LENGTH	185	225	175	145	255	190	0	0	0	0	0	0	0	0	0	260
TOTAL EFFECTIVE LH	246	273	224	192	295	261	1	1	1	1	1	1	1	1	1	278
ADJUSTED PRESSURE	0.06	0.05	0.07	0.08	0.05	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.05
ROUND DUCT SIZE	7	7.5	6.8	5.8	10.2	7.1	0	0	0	0	0	0	0	0	0	8.6
INLET GRILL SIZE	8	8	8	8	8	8	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	14	30	14	0	0	0	0	0	0	0	0	0	30

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.

[signature] - INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

HVAC DESIGNS LTD.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
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TYPE: PRESTON 1 LO # 81348
SITE NAME: LAMBERT'S LANE PH.2 OPT 5 BED

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	4	@ 10.6 cfm	42.4	cfm
Kitchen & Bathrooms	5	@ 10.6 cfm	53	cfm
Other Rooms	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.		TOTAL	201.4	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	**95.4**	**cfm**

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	201.4	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	106.0	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 65H Location: BSMT

95.4 cfm 3.0 sones [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
95.4 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
W/R	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-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

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

CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 81348 Model: PRESTON 1 Builder: GREENPARK HOMES Date: 7/12/2019

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1087	9	9783
First	1087	10	10870
Second	1418	8	11461.694
Third	0	9	0
Fourth	0	9	0
		Total:	32,114.7 ft³
		Total:	909.4 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.242
SUMMER NATURAL AIR CHANGE RATE	0.079

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

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

0.242 x 252.61 x 41 °C x 1.2 = 3022 W

= **10312 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.079 x 252.61 x 6 °C x 1.2 = 146 W

= **497 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

95 CFM x 74 °F x 1.08 x 0.25 = **1911 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

95 CFM x 11 °F x 1.08 x 0.25 = **283 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	10,312	8,793	0.586
2	0.3		9,553	0.324
3	0.2		10,444	0.197
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:	PRESTON 1		OPT 5 BED	**BUILDER:**	GREENPARK HOMES
SFQT:	2507	**LO#**	81348	**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):	32114.7	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 54.0 ft	WIDTH: 30.0 ft	EXPOSED PERIMETER:	168.0 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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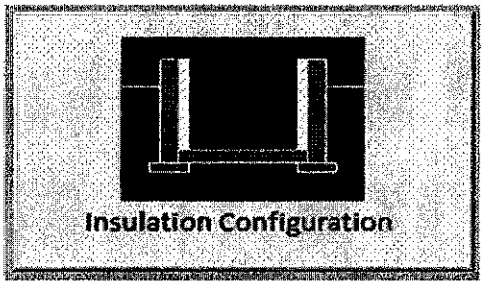
905-619-2300

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):	16.5	 Insulation Configuration
Floor Width (m):	9.1	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m^2):	1.9	
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):	**1693**	

TYPE: PRESTON 1 OPT 5 BED
LO# 81348

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HVAC Designs Ltd.
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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):	7.34
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	909.4
Air Leakage/Ventilation	
Air Tightness Type:	Energy Star Detached (2.5 ACH)
Custom BDT Data:	ELA @ 10 Pa. 848.9 cm^2
	2.50 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 45.0 / Total Exhaust 45.0
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.242**
Cooling Air Leakage Rate (ACH/H):	**0.079**

TYPE: PRESTON 1 OPT 5 BED

LO# 81348

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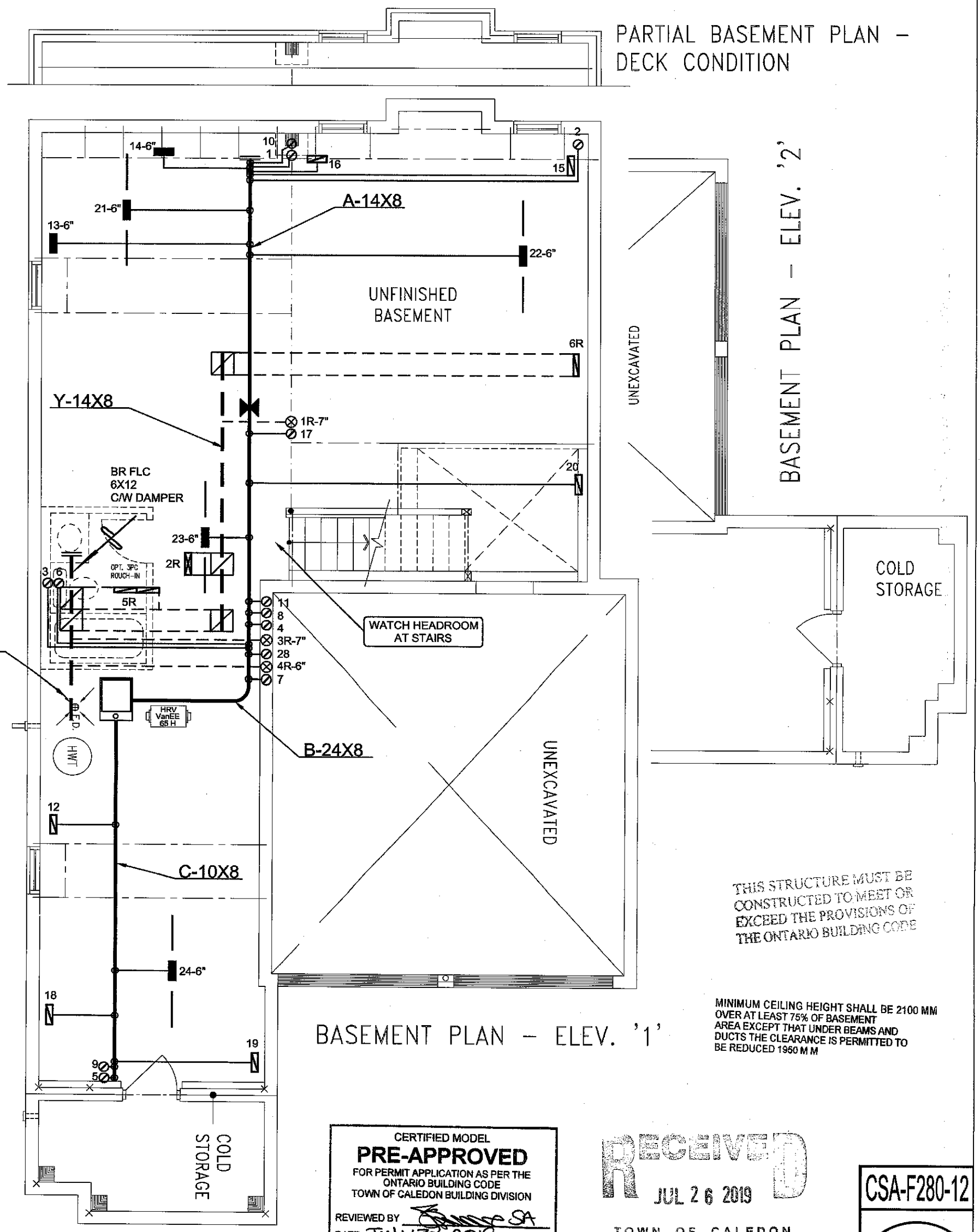

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MINIMUM CEILING HEIGHT SHALL BE 2100 MM OVER AT LEAST 75% OF BASEMENT AREA EXCEPT THAT UNDER BEAMS AND DUCTS THE CLEARANCE IS PERMITTED TO BE REDUCED 1950 M M

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 - PRESTON1 - 5BDR OPT. ELEVATION 1&2

RECEIVED
JUL 26 2019
TOWN OF CALEDON
BUILDING SECTION
FILE NO

CSA-F280-12

ENERGY STAR

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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

OPT 2ND FL
PRESTON 1 2507 sqft

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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.

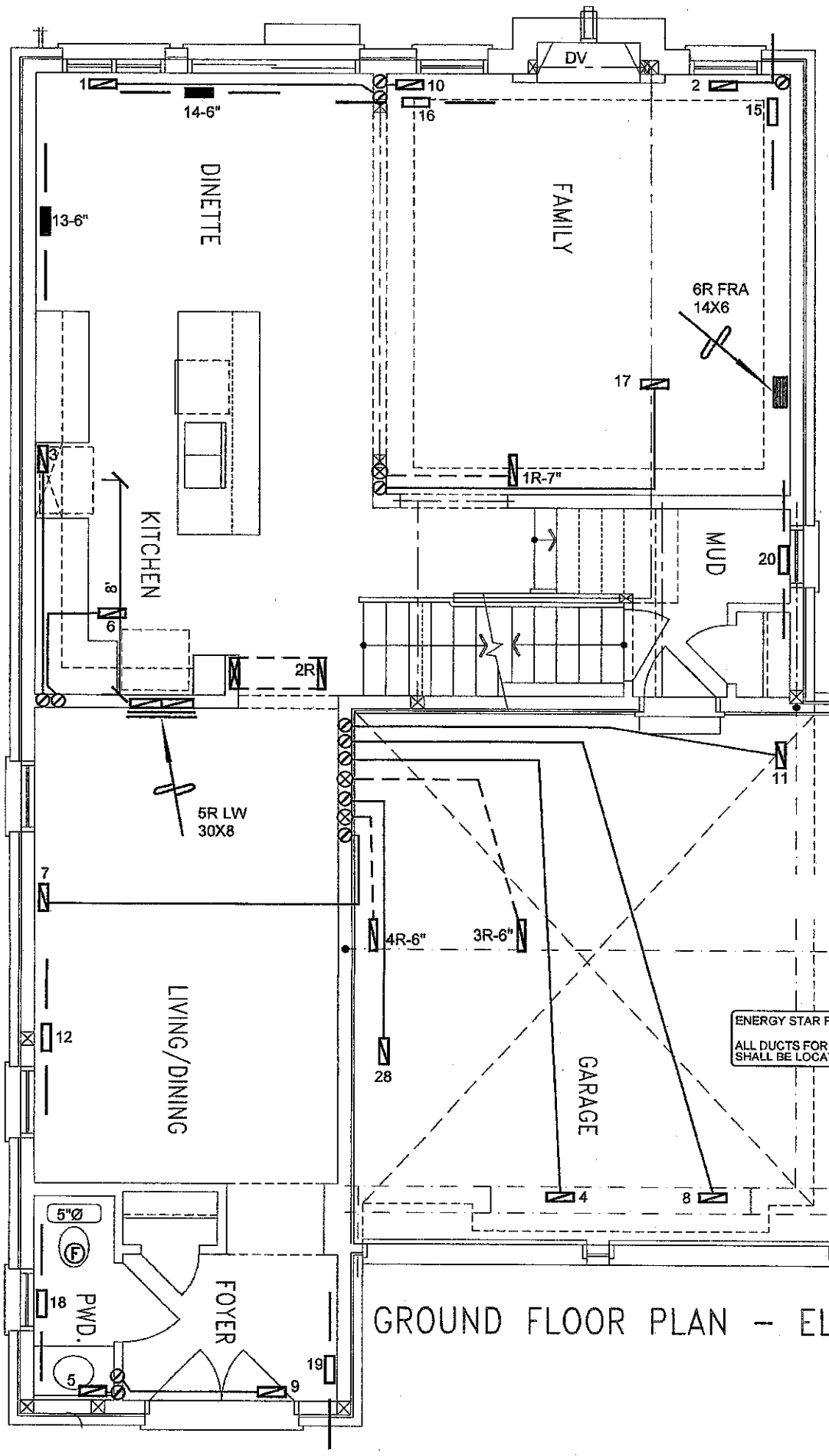
HEAT LOSS 41422 BTU/H	
UNIT DATA	
MAKE	GOODMAN
MODEL	GMEC960603BNA-60
INPUT	60 MBTU/H
OUTPUT	57.6 MBTU/H
COOLING	2.5 TONS
FAN SPEED	1131 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	13	4	4
1ST FLOOR	8	2	2
BASEMENT	4	1	0

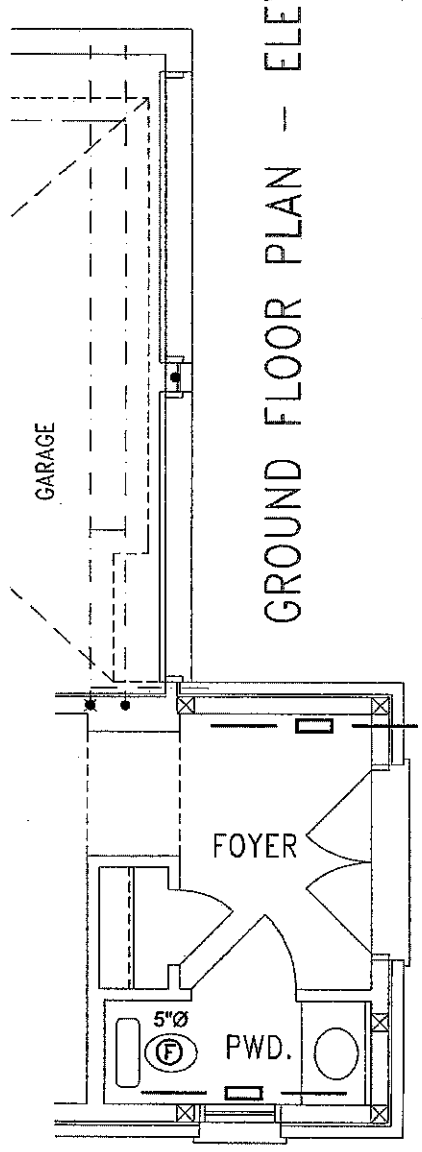
ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

Sheet Title
BASEMENT HEATING LAYOUT

Date FEB/2019
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 81348



GROUND FLOOR PLAN – ELEV. '1'



GROUND FLOOR PLAN – ELEV. '2'

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.

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

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TOWN OF CALEDON
BUILDING SECTION
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Project Name
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CALEDON, ONTARIO

OPT 2ND FL
PRESTON 1 2507 sqft

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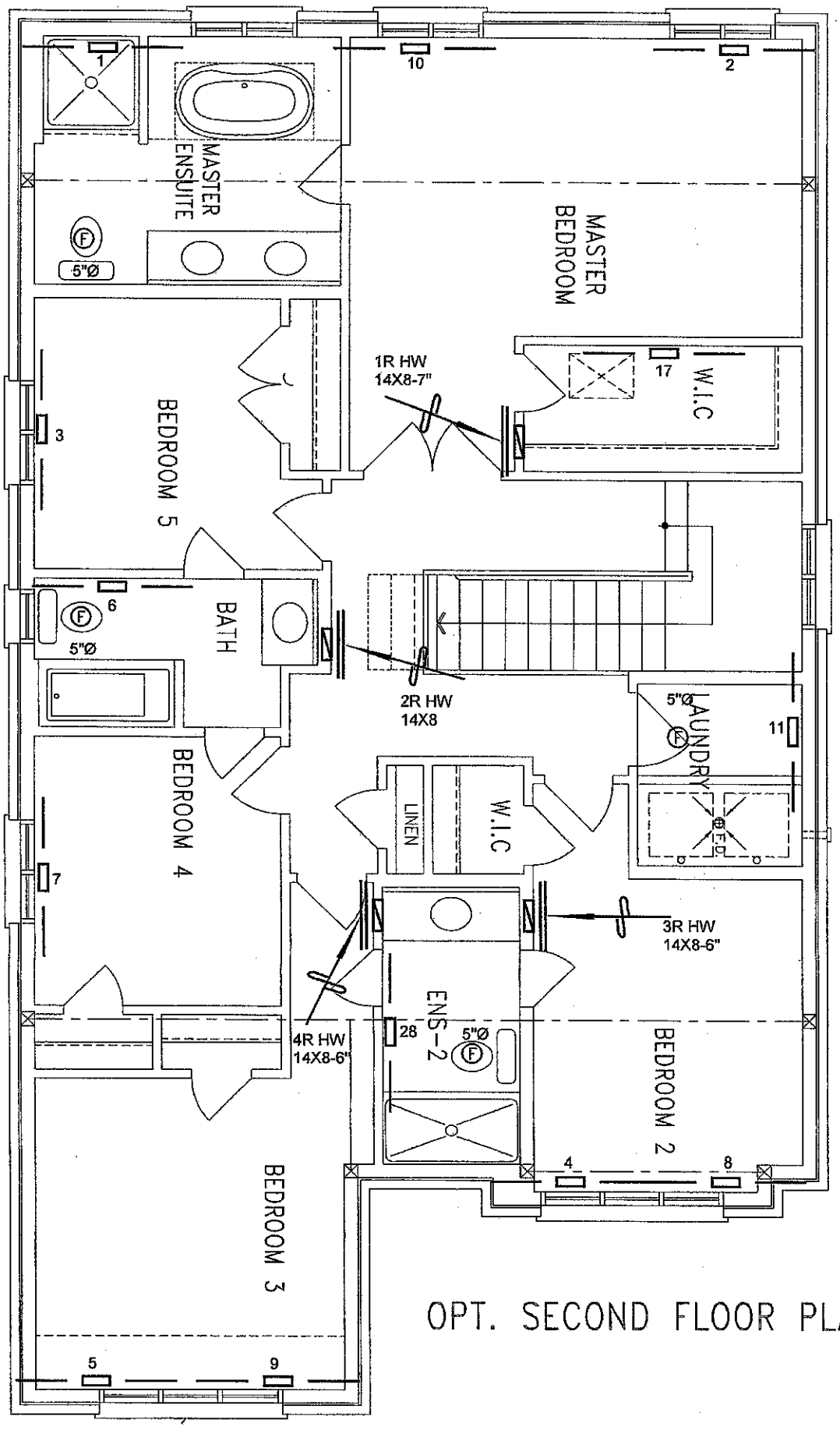
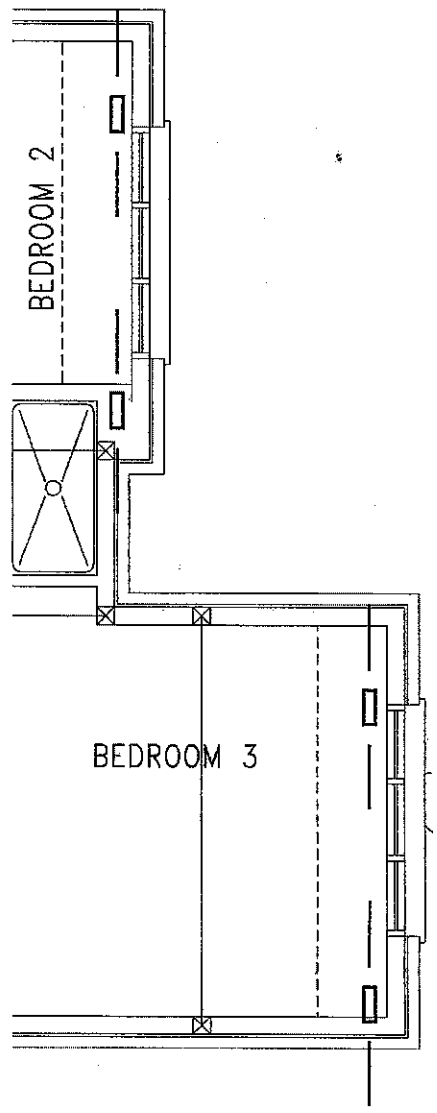
Sheet Title
FIRST FLOOR HEATING LAYOUT

Date FEB/2019
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 81348



OPT. SECOND FLOOR PLAN (5 BED) – ELEV. '1'



OPT. SECOND FLOOR PLAN (5 BED) – ELEV. '2'

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Project Name
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CALEDON, ONTARIO

OPT 2ND FL
PRESTON 1 2507 sqft

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Sheet Title
SECOND FLOOR HEATING LAYOUT

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BCIN# 19669
LO# 81348