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: TRINAR HALL HOMES — DATE: Feb-19 — WINTER NATURAL AIR CHANGE RATE 0.227 — HEAT LOSS ΔT °F. 81 — CSA-F280-12
BUILDER: GREENPARK HOMES — TYPE: BRENTWOOD 3 — GFA: 2787 — LO# 81519 — SUMMER NATURAL AIR CHANGE RATE 0.063 — HEAT GAIN ΔT °F. 11 — ENERGYSTAR

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			ENS-4			ENS-3				ENS-2		
EXP. WALL			32			23			6			15			33			19			9			17				6		
CLG. HT.			9			9			9			9			10			9			9			9				9		
	FACTORS																													
GRS.WALL AREA	LOSS	GAIN	288			207			54			135			330			171			81			153				54		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.4	15.1	0	0	0	0	0	0	0	0	0	18	366	273	0	0	0	0	0	0	0	0	0	0	0	0	10	204	151
EAST	20.4	40.7	0	0	0	0	0	0	0	0	0	0	0	0	30	611	1222	0	0	0	0	0	0	10	204	407	0	0	0
SOUTH	20.4	24.1	0	0	0	11	224	265	0	0	0	0	0	0	0	0	0	34	692	818	11	224	265	0	0	0	0	0	0
WEST	20.4	40.7	36	733	1466	15	305	611	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	34.2	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	27.0	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	3.9	0.5	252	972	131	181	698	94	54	208	28	117	451	61	300	1157	156	137	529	71	70	270	36	143	552	75	44	170	23
NET EXPOSED BSMT WALL ABOVE GR	3.9	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	1.4	0.6	255	351	142	132	182	74	102	140	57	240	330	134	338	465	188	209	287	117	99	136	55	70	96	39	102	140	57
NO ATTIC EXPOSED CLG	2.9	1.2	0	0	0	0	0	0	0	0	0	0	0	0	68	200	81	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.7	0.4	0	0	0	0	0	0	0	0	0	0	0	0	153	418	56	0	0	0	0	0	0	70	191	26	102	279	38
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				2055			1409			349			1148			2850			1508			630			1043			792	
SUB TOTAL HT GAIN					1739			1043			85			467			1704			1006			356			547			269
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		0.20	0.21	
AIR CHANGE HEAT LOSS				432			296			73			241			599			317			132			219			167	
AIR CHANGE HEAT GAIN					104			63			5			28			102			60			21			33			16
DUCT LOSS				0			0			0			0			345			0			0			126			96	
DUCT GAIN					0			0			0			0			261			0			0			58			28
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					568			0			0			568			568			568			0			0			0
TOTAL HT LOSS BTU/H				2487			1705			422			1389			3795			1825			762			1388			1054	
TOTAL HT GAIN x 1.3 BTU/H					3760			1438			117			1695			3739			2437			491			828			408

ROOM USE			LV/DN				KT/FM			LAUN				W/R			FOY				BAS		
EXP. WALL			34				72			18				12			42				184		
CLG. HT.			10				10			11				10			10				9		
	FACTORS																						
GRS.WALL AREA	LOSS	GAIN	340				720			198				120			420				1104		
GLAZING				LOSS	GAIN			LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN			LOSS	GAIN
NORTH	20.4	15.1	0	0	0		0	0	0	11	224	167		0	0	0	0	0	0		4	81	61
EAST	20.4	40.7	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		0	0	0
SOUTH	20.4	24.1	28	570	674		0	0	0	0	0	0		0	0	0	0	0	0		8	163	193
WEST	20.4	40.7	0	0	0		47	956	1914	0	0	0		0	0	0	0	0	0		0	0	0
SKYLT.	34.2	99.9	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		0	0	0
DOORS	27.0	3.7	0	0	0		10	270	37	20	541	73		0	0	0	40	1082	146		20	541	73
NET EXPOSED WALL	3.9	0.5	312	1204	163		663	2558	346	167	644	87		120	463	63	380	1466	198		0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.9	0.5	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		552	2128	288
EXPOSED CLG	1.4	0.6	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		0	0	0
NO ATTIC EXPOSED CLG	2.9	1.2	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		0	0	0
EXPOSED FLOOR	2.7	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				6592	
SLAB ON GRADE HEAT LOSS				0				0			0				0			0					
SUBTOTAL HT LOSS				1773				3785			1409				463			2548				9505	
SUB TOTAL HT GAIN					836				2296			327				63			344				614
LEVEL FACTOR / MULTIPLIER			0.30	0.37			0.30	0.37		0.30	0.37			0.30	0.37		0.30	0.37			0.50	0.65	
AIR CHANGE HEAT LOSS				660				1409			525				172			949				6193	
AIR CHANGE HEAT GAIN					50				138			20				4			21				37
DUCT LOSS				0				0			0				0			0				0	
DUCT GAIN					0				0			0				0			0				0
HEAT GAIN PEOPLE	240		0		0		0		0	0		0		0		0	0		0		0		0
HEAT GAIN APPLIANCES/LIGHTS					568				568			568				0			568				568
TOTAL HT LOSS BTU/H				2434				5194			1934				635			3496				15698	
TOTAL HT GAIN x 1.3 BTU/H					1892				3903			1189				86			1213				1585

Town of East Gwillimbury
Building Standards Branch BCIN #16487

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Discipline	Reviewer	BCIN	Date
Building Code	H. Authier	43236	2021-02-05
Sewage System			
Zoning			

TOTAL HEAT GAIN BTU/H: 25016 — TONS: 2.08 — LOSS DUE TO VENTILATION LOAD BTU/H: 1747 — STRUCTURAL HEAT LOSS: 44219 — TOTAL COMBINED HEAT LOSS BTU/H: 45966

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: TRINAR HALL HOMES
BUILDER: GREENPARK HOMES

TYPE: BRENTWOOD 3 DATE: Feb-19 GFA: 2787 LO# 81519

HEATING CFM	1131	COOLING CFM	1131	furnace pressure	0.6
TOTAL HEAT LOSS	44,219	TOTAL HEAT GAIN	24,780	furnace filter	0.05
AIR FLOW RATE CFM	25.58	AIR FLOW RATE CFM	45.64	a/c coil pressure	0.2
				available pressure for s/a & r/a	0.35

#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	11	7	4
R/A	0	0	4	2	1

plenum pressure s/a 0.18 r/a pressure 0.17
max s/a dif press. loss 0.03 r/a grille press. Loss 0.02
min adjusted pressure s/a 0.15 adjusted pressure r/a 0.15

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	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-3	ENS-4	BED-3	MBR	ENS-2	LV/DN	KT/FM	KT/FM	KT/FM	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.24	1.71	0.42	1.39	1.90	1.82	1.39	0.76	1.90	1.24	1.05	2.43	1.73	1.73	1.73	1.93	0.64	3.50	3.92	3.92	3.92	3.92
CFM PER RUN HEAT	32	44	11	36	49	47	36	20	49	32	27	62	44	44	44	49	16	89	100	100	100	100
RM GAIN MBH.	1.88	1.44	0.12	1.69	1.87	2.44	0.83	0.49	1.87	1.88	0.41	1.89	1.30	1.30	1.30	1.19	0.09	1.21	0.40	0.40	0.40	0.40
CFM PER RUN COOLING	86	66	5	77	85	111	38	22	85	86	19	86	59	59	59	54	4	55	18	18	18	18
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.16	0.15	0.17	0.17	0.16	0.16	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	63	60	37	30	41	32	41	48	55	70	37	29	41	36	49	13	9	37	47	40	18	32
EQUIVALENT LENGTH	160	140	190	190	160	170	190	150	130	160	200	160	120	130	160	130	190	130	200	200	190	180
TOTAL EFFECTIVE LENGTH	223	200	227	220	201	202	231	198	185	230	237	189	161	166	209	143	199	167	247	240	208	212
ADJUSTED PRESSURE	0.07	0.09	0.08	0.08	0.08	0.08	0.07	0.09	0.09	0.07	0.07	0.09	0.11	0.1	0.08	0.12	0.09	0.1	0.07	0.07	0.08	0.08
ROUND DUCT SIZE	6	5	4	6	6	6	4	4	6	6	4	6	5	5	5	5	4	6	6	6	6	6
HEATING VELOCITY (ft/min)	163	323	126	184	250	240	413	229	250	163	310	316	323	323	323	360	184	454	510	510	510	510
COOLING VELOCITY (ft/min)	438	485	57	393	433	566	436	252	433	438	218	438	433	433	433	396	46	280	92	92	92	92
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10
TRUNK	A	B	B	B	C	B	C	B	C	A	C	B	A	A	A	D	B	C	A	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	

Town of East Gwillimbury
Building Standards Branch BCIN #16487

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Discipline	Reviewer	BCIN	Date
Building Code	H. Authier	43236	2021-02-05
Sewage System			
Zoning			

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	396	0.07	10.2	12	x	8	594	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	732	0.07	12.9	20	x	8	659	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	350	0.07	9.8	12	x	8	525	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	1131	0.07	15.2	26	x	8	783	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	1131	0.07	15.2	30	x	8	679
TRUNK Y	690	0.07	12.6	18	x	8	690
TRUNK Z	345	0.07	9.7	12	x	8	518
DROP	1131	0.07	15.2	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	160	160	160	85	185	185	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.	49	29	22	45	38	22	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	155	190	185	180	145	160	0	0	0	0	0	0	0	0	0	175
TOTAL EFFECTIVE LH	204	219	207	225	183	182	1	1	1	1	1	1	1	1	1	189
ADJUSTED PRESSURE	0.07	0.07	0.07	0.07	0.08	0.08	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.08
ROUND DUCT SIZE	7.3	7.3	7.3	5.8	7.5	7.5	0	0	0	0	0	0	0	0	0	7.6
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	14	14	0	0	0	0	0	0	0	0	0	24

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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TYPE: BRENTWOOD 3 LO # 81519
SITE NAME: TRINAR HALL HOMES

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	6	@ 10.6 cfm	63.6	cfm
Other Rooms	3	@ 10.6 cfm	31.8	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	63.6	cfm
4	Bedroom	79.5	cfm
5	Bedroom	95.4	cfm
	TOTAL	79.5	cfm

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	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	81 F	X	1.08	X	0.25

SUPPLEMENTAL FANS PANASONIC

Location	Model	cfm	HVI	Sones
ENS	FV-05-11VK1	50	✓	0.3
ENS-4	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 Per

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: February-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

Town of East Gwillimbury
Building Standards Branch BCIN #16487

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 81519 Model: BRENTWOOD 3 Builder: GREENPARK HOMES Date: 2/21/2019

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1241	9	11169
First	1241	10	12410
Second	1546	9	13914
Third	0	9	0
Fourth	0	9	0
		Total:	37,493.0 ft³
		Total:	1061.7 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.227
SUMMER NATURAL AIR CHANGE RATE	0.063

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-23	45	81
Summer DTDc	24	30	6	11

5.2.3.1 Heat Loss due to Air Leakage

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

0.227 x 294.91 x 45 °C x 1.2 = 3630 W

= **12386 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.063 x 294.91 x 6 °C x 1.2 = 136 W

= 465 Btu/h

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

80 CFM x 81 °F x 1.08 x 0.25 = **1747 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

80 CFM x 11 °F x 1.08 x 0.25 = **236 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	12,386	9,505	0.652
2	0.3		9,978	0.372
3	0.2		11,783	0.210
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

Town of East Gwillimbury
Building Standards Branch BCIN #16487

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Discipline	Reviewer	BCIN	Date
Building Code	H. Authier	43236	2021-02-05
Sewage System			
Zoning			

HVAC DESIGNS LTD.
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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: BRENTWOOD 3 **BUILDER:** GREENPARK HOMES
SFQT: 2787 **LO#** 81519 **SITE:** TRINAR HALL HOMES

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-9	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):	37493.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 64.0 ft	WIDTH: 28.0 ft	EXPOSED PERIMETER:	184.0 ft

2012 OBC - COMPLIANCE PACKAGE	**Compliance Package ENERGYSTAR**	
Component	**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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Sewage System			
Zoning			

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

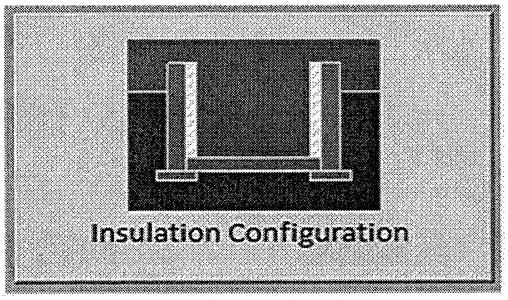
Michael O'Rourke

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:	Bradford
Site Description	
Soil Conductivity:	Normal conductivity: dry sand, loam, clay
Water Table:	Normal (7-10 m, 23-33 ft)
Foundation Dimensions	
Floor Length (m):	**19.5**
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):	**1.1**
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):	**1932**



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Sewage System			
Zoning			

TYPE: BRENTWOOD 3
LO# 81519

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:	Bradford
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):	1061.7
Air Leakage/Ventilation	
Air Tightness Type:	Energy Star Detached (2.5 ACH)
Custom BDT Data:	ELA @ 10 Pa. 991.1 cm^2
	2.50 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 37.5 / Total Exhaust 37.5

Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0

Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.227**
Cooling Air Leakage Rate (ACH/H):	**0.063**

Town of East Gwillimbury
Building Standards Branch BCIN #16487

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TYPE: BRENTWOOD 3
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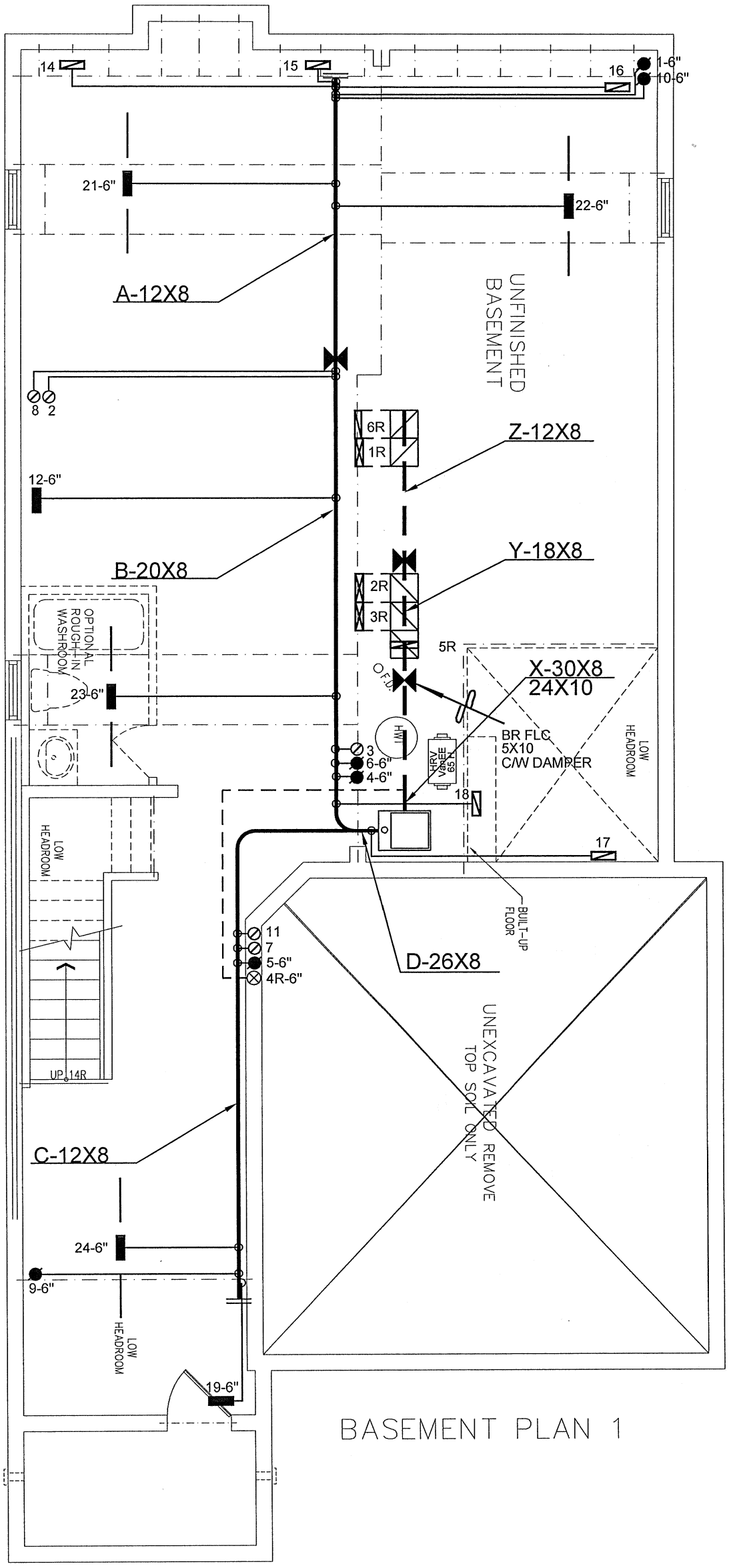
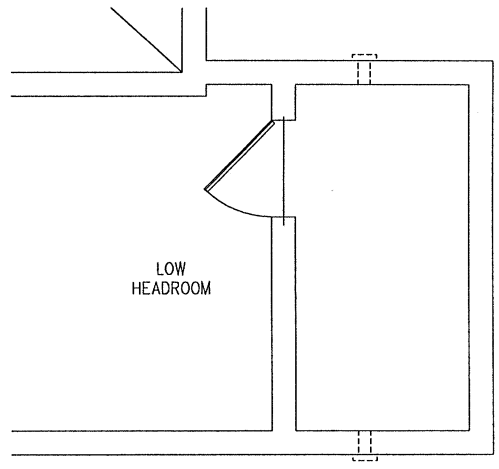
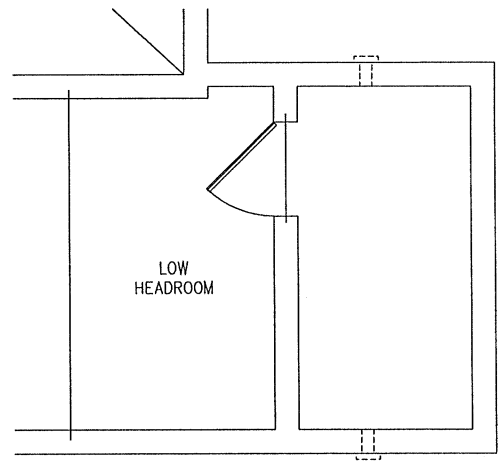


BASEMENT PLAN 1



BASEMENT PLAN 2



BASEMENT PLAN 3

Town of East Gwillimbury
Building Standards Branch BCIN #16487

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Zoning			

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.

CSA-F280-12

ENERGY STAR

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
TRINAR HALL HOMES
EAST GWILLIMBURY, ONT.

BRENTWOOD 3 2787 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.

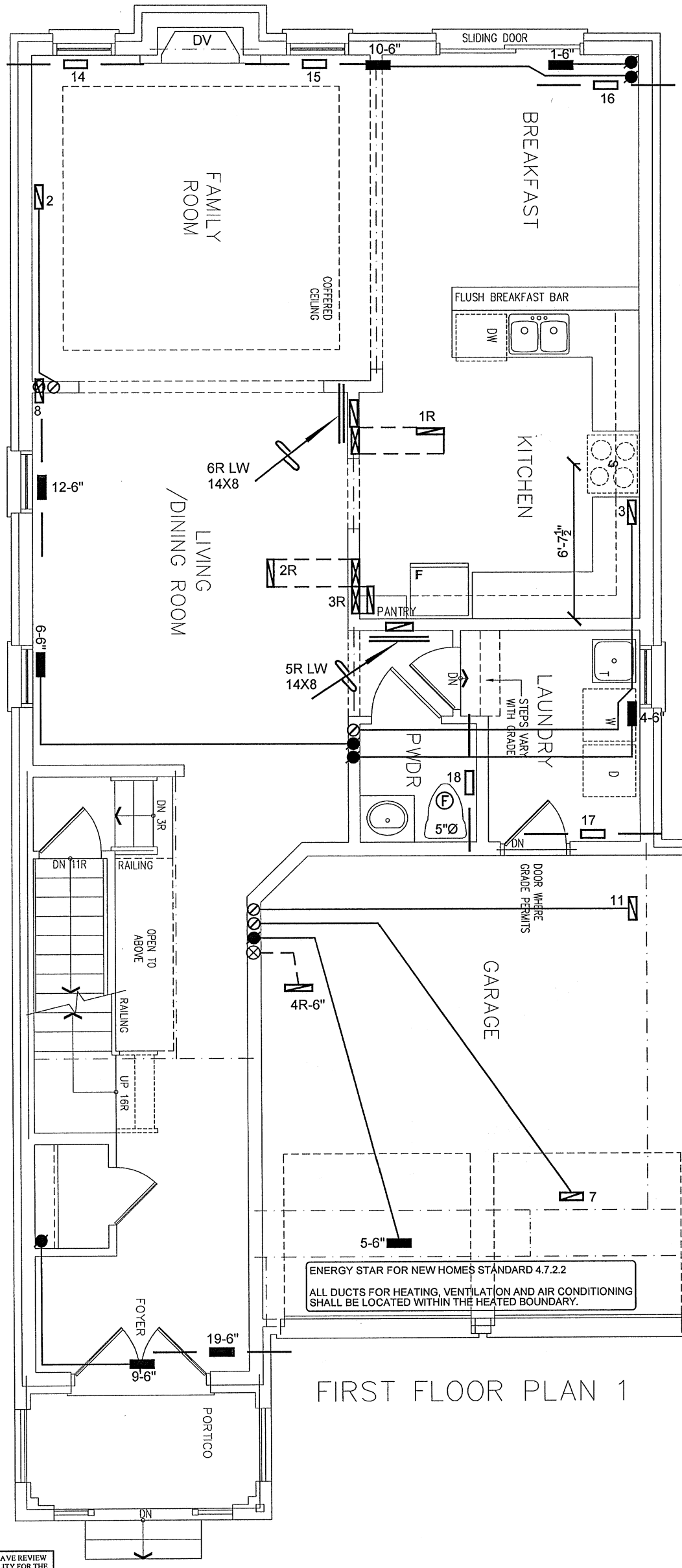
HEAT LOSS 45966 BTU/H	
UNIT DATA	
MAKE	GOODMAN
MODEL	GMEC960603BNA
INPUT	60 MBTU/H
OUTPUT	57.6 MBTU/H
COOLING	2.0 TONS
FAN SPEED	1131 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	11	4	4
1ST FLOOR	7	2	2
BASEMENT	4	1	0

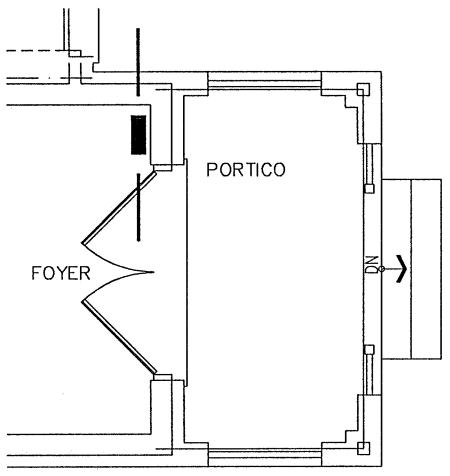
ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

Sheet Title
BASEMENT HEATING LAYOUT

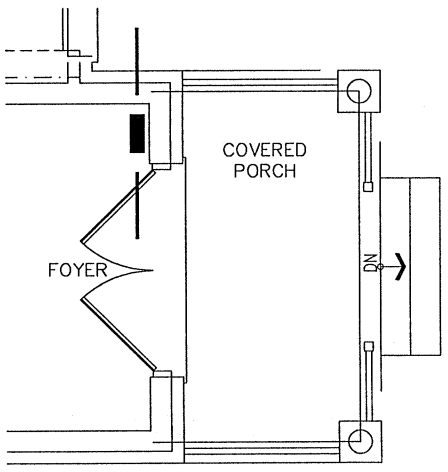
Date FEB/2019
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 81519



FIRST FLOOR PLAN 1



FIRST FLOOR PLAN 2



FIRST FLOOR PLAN 3

Town of East Gwillimbury
Building Standards Branch BCIN #16487

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Zoning			

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HVAC DESIGNS LTD.

CSA-F280-12

ENERGY STAR

HVAC LEGEND

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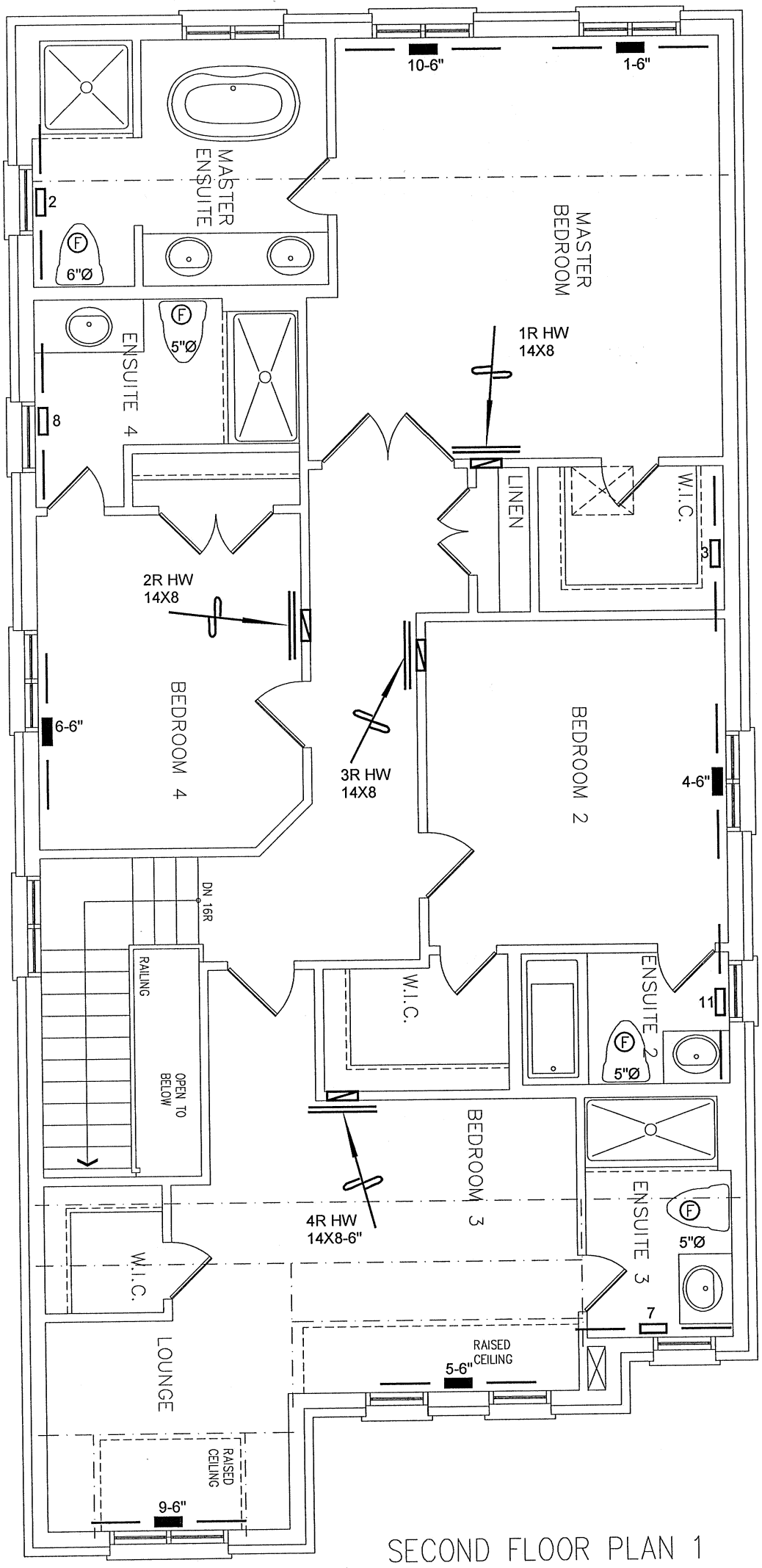
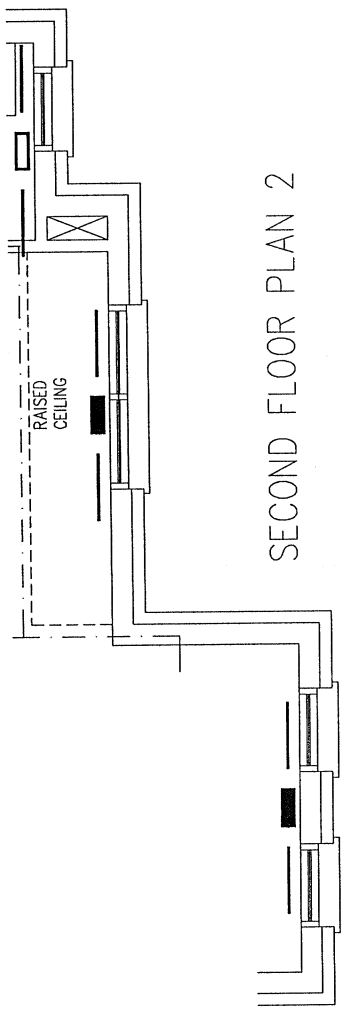
Sheet Title
FIRST FLOOR HEATING LAYOUT

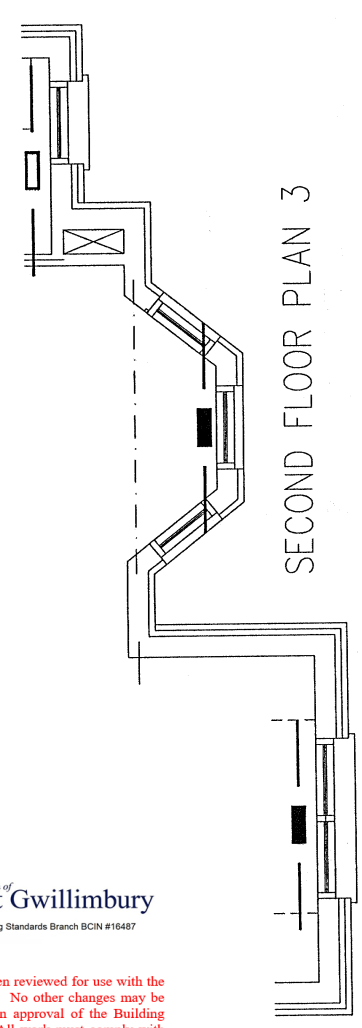
Date FEB/2019
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 81519



SECOND FLOOR PLAN 1



SECOND FLOOR PLAN 2



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CSA-F280-12

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