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: GLENWAY 2A — GFA: 2717 — LO# 81521 — SUMMER NATURAL AIR CHANGE RATE 0.063 — HEAT GAIN ΔT °F. 11 — ENERGYSTAR

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			BATH			ENS-2		
EXP. WALL			37			23			6			27			30			15			7			9		
CLG. HT.			9			9			9			9			9			9			9			9		
	FACTORS																									
GRS.WALL AREA	LOSS	GAIN	333			207			54			243			270			135			63			81		
GLAZING			LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN
NORTH	20.4	15.1	8	163	121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	326	242
EAST	20.4	40.7	0	0	0	0	0	0	0	0	0	32	651	1303	32	651	1303	0	0	0	0	0	0	0	0	0
SOUTH	20.4	24.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	326	385	6	122	144	0	0	0
WEST	20.4	40.7	28	570	1140	20	407	814	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
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
NET EXPOSED WALL	3.9	0.5	297	1146	155	187	721	97	54	208	28	211	814	110	238	918	124	119	459	62	57	220	30	65	251	34
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
EXPOSED CLG	1.4	0.6	339	466	189	170	234	95	88	121	49	218	300	122	180	248	100	168	231	94	117	161	65	100	138	56
NO ATTIC EXPOSED CLG	2.9	1.2	0	0	0	0	0	0	0	0	0	0	0	0	20	59	24	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.7	0.4	0	0	0	0	0	0	0	0	0	218	595	80	20	55	7	0	0	0	0	0	0	100	273	37
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0			0	
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			0	
SUBTOTAL HT LOSS				2344			1362			329			2360			1930			1016			503			987	
SUB TOTAL HT GAIN					1605			1007			77			1615			1559			541			239			369
LEVEL FACTOR / MULTIPLIER			0.20	0.23		0.20	0.23		0.20	0.23		0.20	0.23		0.20	0.23		0.20	0.23		0.20	0.23		0.20	0.23	
AIR CHANGE HEAT LOSS				529			307			74			532			435			229			113			223	
AIR CHANGE HEAT GAIN					79			49			4			79			77			27			12			18
DUCT LOSS				0			0			0			289			237			0			0			121	
DUCT GAIN					0			0			0			260			254			0			0			39
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					670			0			0			670			670			670			0			0
TOTAL HT LOSS BTU/H				2873			1669			404			3182			2602			1245			616			1330	
TOTAL HT GAIN x 1.3 BTU/H					3684			1373			105			3724			3639			1920			326			553

ROOM USE			KT/FM			LV/DN			LAUN			PWD			FOY			BAS		
EXP. WALL			77			41			21			14			18			170		
CLG. HT.			10			10			10			10			10			9		
	FACTORS																			
GRS.WALL AREA	LOSS	GAIN	770			410			210			140			180			1020		
GLAZING			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	0	0	0	0	0	0	0	0	0
EAST	20.4	40.7	0	0	0	0	0	0	0	0	0	5	102	204	10	204	407	0	0	0
SOUTH	20.4	24.1	0	0	0	38	773	914	0	0	0	0	0	0	0	0	0	6	122	144
WEST	20.4	40.7	96	1954	3909	0	0	0	0	0	0	0	0	0	0	0	0	3	61	122
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	0	0	0	20	541	73	0	0	0	30	811	110	20	541	73
NET EXPOSED WALL	3.9	0.5	674	2600	351	372	1435	194	190	733	99	135	521	70	140	540	73	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	510	1966	266
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	70	206	83	0	0	0	27	79	32	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			6085	
SLAB ON GRADE HEAT LOSS				0			0			0			0			0				
SUBTOTAL HT LOSS				4759			2208			1353			623			1555			8774	
SUB TOTAL HT GAIN					4344			1108			204			274			590			605
LEVEL FACTOR / MULTIPLIER			0.30	0.35		0.30	0.35		0.30	0.35		0.30	0.35		0.30	0.35		0.50	0.70	
AIR CHANGE HEAT LOSS				1661			771			472			217			543			6105	
AIR CHANGE HEAT GAIN					213			54			10			13			29			30
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					670			670			670			0			0			670
TOTAL HT LOSS BTU/H				6420			2979			1825			840			2097			14880	
TOTAL HT GAIN x 1.3 BTU/H					6795			2382			1149			374			804			1696

Town of East Gwillimbury
Building Standards Branch BCIN #16487

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Discipline	Reviewer	BCIN	Date
Building Code	H. Authier	43236	2021-02-08
Sewage System			
Zoning			

TOTAL HEAT GAIN BTU/H: 28760 — TONS: 2.40 — LOSS DUE TO VENTILATION LOAD BTU/H: 1747 — STRUCTURAL HEAT LOSS: 42962 — TOTAL COMBINED HEAT LOSS BTU/H: 44710

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: GLENWAY 2A DATE: Feb-19 GFA: 2717 LO# 81521

HEATING CFM	1131	COOLING CFM	1131
TOTAL HEAT LOSS	42,962	TOTAL HEAT GAIN	28,524
AIR FLOW RATE CFM	26.33	AIR FLOW RATE CFM	39.65

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	12	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	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	ENS	BED-2	MBR	ENS-2	BED-3	KT/FM	KT/FM	KT/FM	LV/DN	LAUN	PWD	FOY	LV/DN	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.44	0.83	0.40	1.59	1.30	1.24	0.62	0.83	1.59	1.44	1.33	1.30	2.14	2.14	2.14	1.49	1.83	0.84	2.10	1.49	3.72	3.72	3.72	3.72
CFM PER RUN HEAT	38	22	11	42	34	33	16	22	42	38	35	34	56	56	56	39	48	22	55	39	98	98	98	98
RM GAIN MBH.	1.84	0.69	0.11	1.86	1.82	1.92	0.33	0.69	1.86	1.84	0.55	1.82	2.26	2.26	2.26	1.19	1.15	0.37	0.80	1.19	0.42	0.42	0.42	0.42
CFM PER RUN COOLING	73	27	4	74	72	76	13	27	74	73	22	72	90	90	90	47	46	15	32	47	17	17	17	17
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	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	31	34	32	53	62	31	47	44	48	38	50	53	36	25	25	21	20	40	36	31	32	27	23	35
EQUIVALENT LENGTH	160	160	150	150	210	110	140	120	140	140	150	200	100	140	100	100	110	130	120	100	110	100	140	120
TOTAL EFFECTIVE LENGTH	191	194	182	203	272	141	187	164	188	178	200	253	136	165	125	121	130	170	156	131	142	127	163	155
ADJUSTED PRESSURE	0.09	0.09	0.09	0.08	0.06	0.12	0.09	0.1	0.09	0.1	0.09	0.07	0.12	0.1	0.13	0.14	0.13	0.1	0.11	0.13	0.11	0.13	0.1	0.1
ROUND DUCT SIZE	5	4	4	6	6	6	4	4	6	5	4	6	6	6	6	4	4	4	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	279	252	126	214	173	168	184	252	214	279	402	173	286	286	286	447	551	252	404	447	500	500	500	500
COOLING VELOCITY (ft/min)	536	310	46	377	367	388	149	310	377	536	252	367	459	459	459	539	528	172	235	539	87	87	87	87
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	B	B	E	D	C	E	B	E	A	E	D	B	B	A	C	C	D	D	E	B	A	E	D

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	2021-02-08
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	230	0.09	7.9	8	x	8	518	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	265	0.09	8.3	8	x	8	596	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	615	0.09	11.3	16	x	8	692	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	243	0.06	8.9	10	x	8	437	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	515	0.06	11.8	16	x	8	579	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	0.06	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	866	0.06	14.3	24	x	8	650
TRUNK Y	475	0.06	11.4	16	x	8	534
TRUNK Z	265	0.06	9.2	10	x	8	477
DROP	1131	0.06	15.8	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	200	85	85	95	300	175	0	0	0	0	0	0	0	0	0	191
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.	32	53	56	48	30	28	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	135	175	175	140	190	185	0	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	167	228	231	188	220	213	1	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.09	0.06	0.06	0.08	0.07	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	7.5	6	6	5.8	9.2	7.5	0	0	0	0	0	0	0	0	0	7.1
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	14

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

HVAC DESIGNS LTD.

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TYPE: GLENWAY 2A LO # 81521
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	5	@ 10.6 cfm	53	cfm
Other Rooms	4	@ 10.6 cfm	42.4	cfm
Table 9.32.3.A.		TOTAL	169.6	cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED 9.32.3.4.(1)

1	Bedroom	31.8	cfm
2	Bedroom	47.7	cfm
3	Bedroom	63.6	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
BATH	FV-05-11VK1	50	✓	0.3
ENS-2	FV-05-11VK1	50	✓	0.3
PWD	FV-05-11VK1	50	✓	0.3

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE 65H

155 cfm high 64 cfm low

75 % Sensible Efficiency @ 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: 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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Zoning			

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 81521 Model: GLENWAY 2A Builder: GREENPARK HOMES Date: 2/22/2019

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1251	9	11259
First	1251	10	12510
Second	1466	9	13194
Third	0	9	0
Fourth	0	9	0
		Total:	36,963.0 ft³
		Total:	1046.7 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 290.74 x 45 °C x 1.2 = 3579 W

= **12211 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 290.74 x 6 °C x 1.2 = 134 W

= **459 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	12,211	8,774	0.696
2	0.3		10,499	0.349
3	0.2		10,832	0.225
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	2021-02-08
Sewage System			
Zoning			

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: GLENWAY 2A **BUILDER:** GREENPARK HOMES
SFQT: 2717 **LO#** 81521 **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):	36963.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft^2):	1.35	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 49.0 ft	WIDTH: 36.0 ft	EXPOSED PERIMETER:	170.0 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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Building Code	H. Authier	43236	2021-02-08
Sewage System			
Zoning			

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

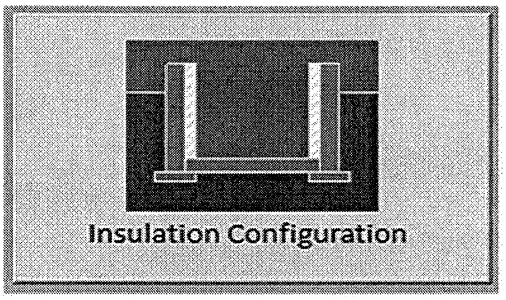
Michael O'Rourke

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):	14.9	 Insulation Configuration
Floor Width (m):	11.0	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m^2):	0.8	
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):	**1783**	

Town of East Gwillimbury
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Discipline	Reviewer	BCIN	Date
Building Code	H. Authier	43236	2021-02-08
Sewage System			
Zoning			

TYPE: GLENWAY 2A
LO# 81521

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):	1046.7
Air Leakage/Ventilation	
Air Tightness Type:	Energy Star Detached (2.5 ACH)
Custom BDT Data:	ELA @ 10 Pa. 977.1 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**

TYPE: GLENWAY 2A
LO# 81521

Town of East Gwillimbury
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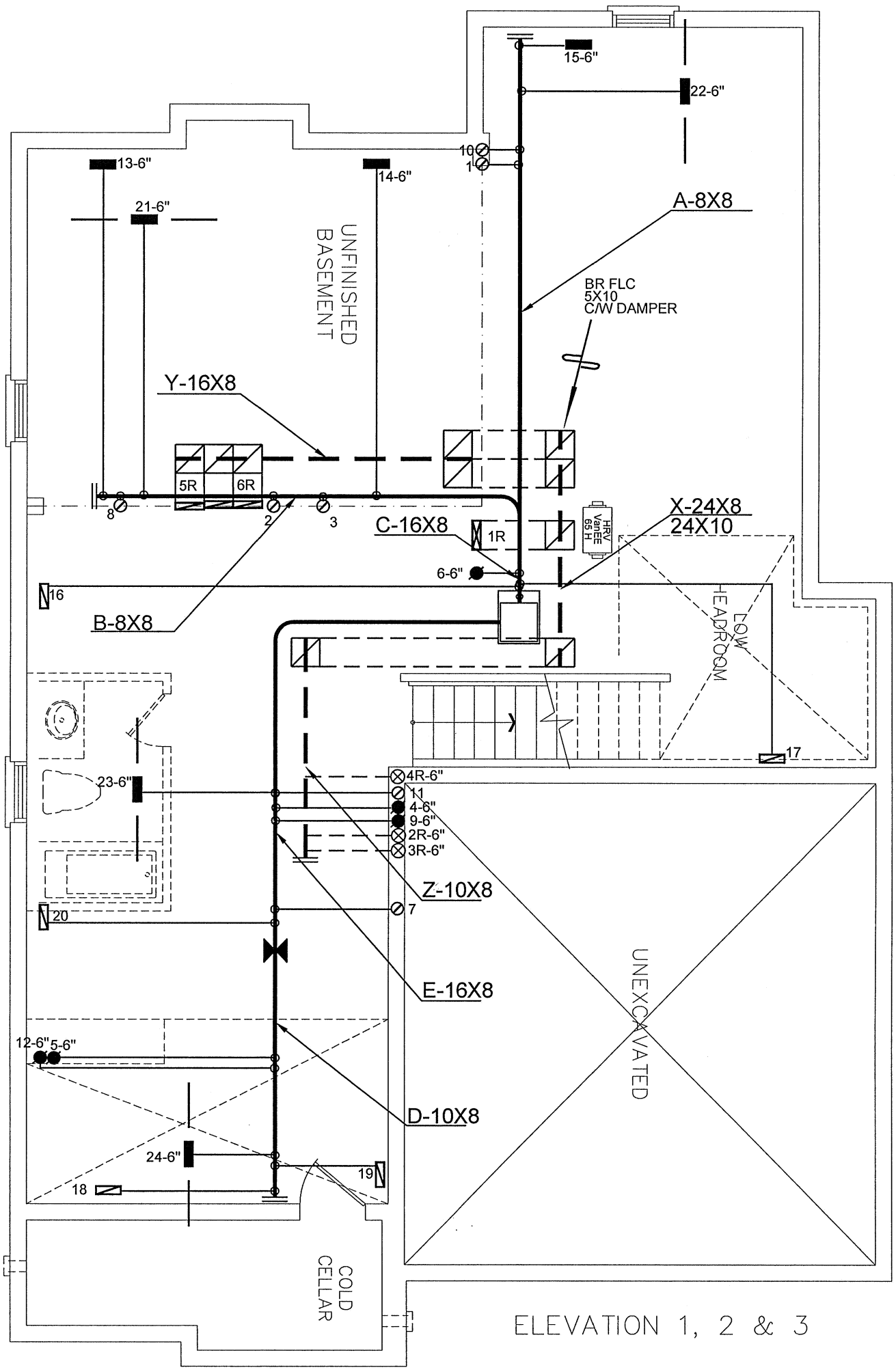

ELEVATION 1, 2 & 3

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.

ENERGY STAR
CSA-F280-12

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, ONTARIO

GLENWAY 2A 2717 sqft

HVAC DESIGNS LTD.
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L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
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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.

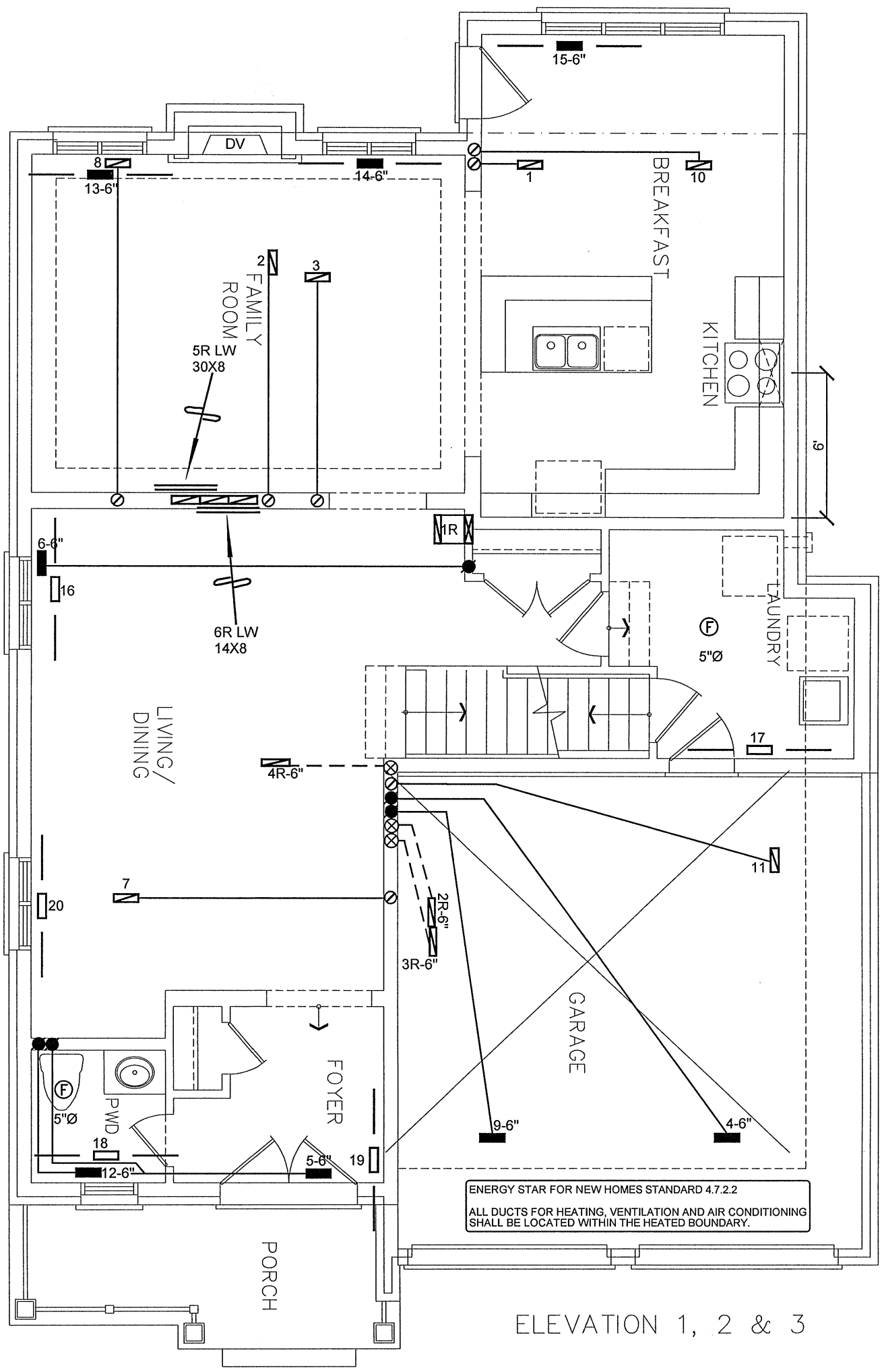
HEAT LOSS 44710 BTU/H UNIT DATA	
MAKE	GOODMAN
MODEL	GMEC960603BNA
INPUT	60 MBTU/H
OUTPUT	57.6 MBTU/H
COOLING	2.5 TONS
FAN SPEED	1131 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	12	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# 81521



ELEVATION 1, 2 & 3

Town of East Gwillimbury
Building Standards Branch BCIN #16487

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Sewage System			
Zoning			

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HVAC DESIGNS LTD.

ENERGY STAR
CSA-F280-12

HVAC LEGEND

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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
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REVISIONS

Client
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Project Name
TRINAR HALL HOMES
EAST GWILLIMBURY, ONTARIO

GLENWAY 2A 2717 sqft

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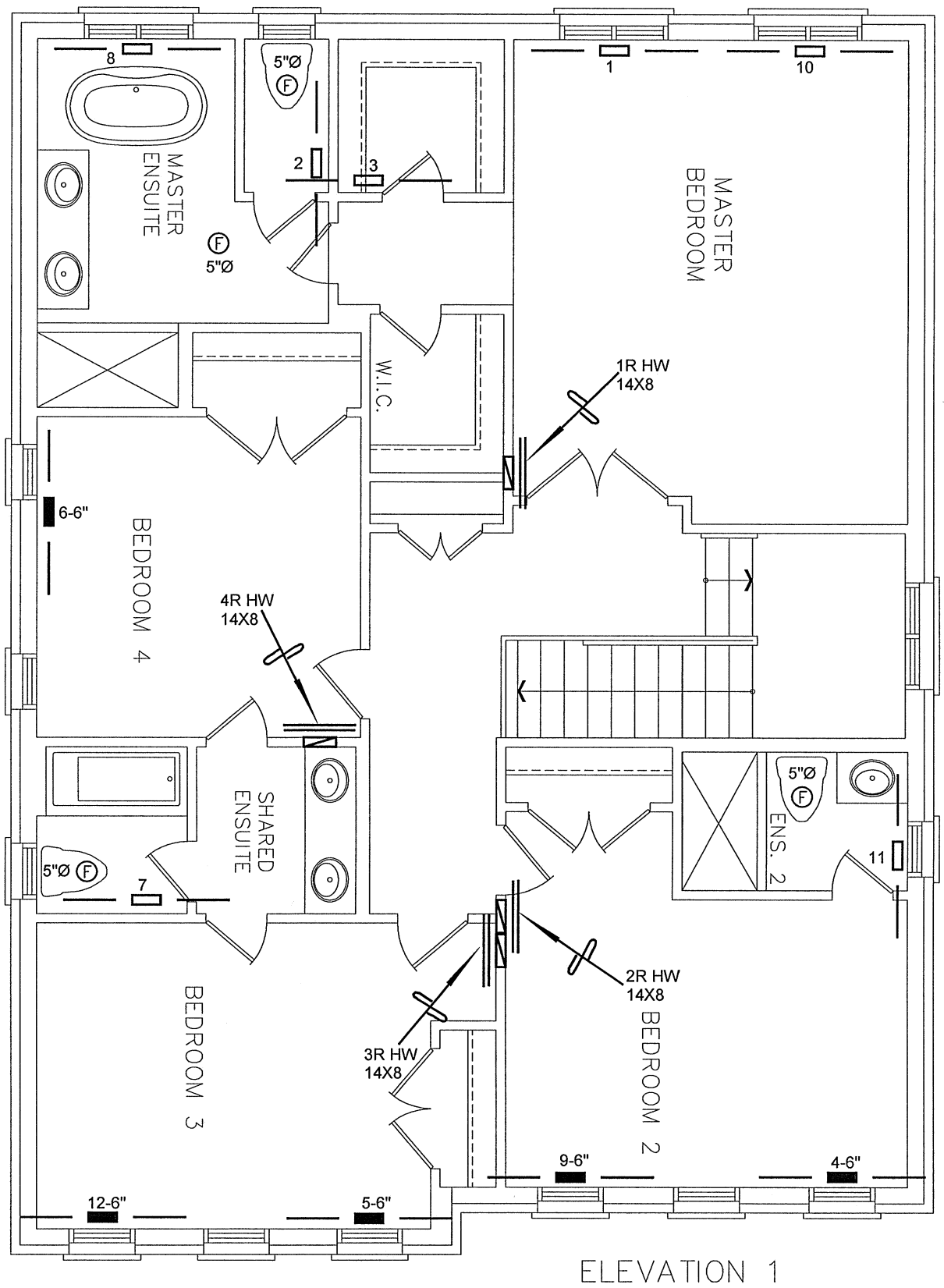
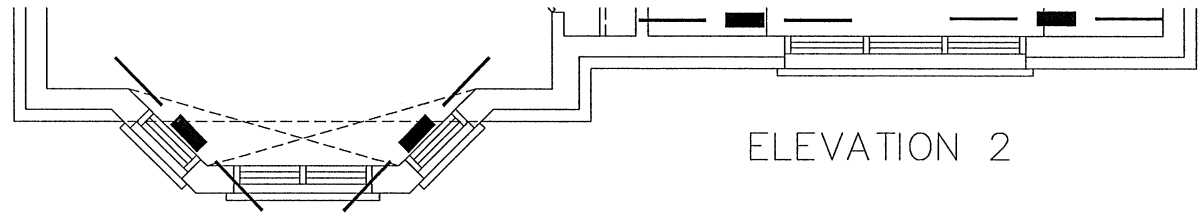
Sheet Title
FIRST FLOOR HEATING LAYOUT

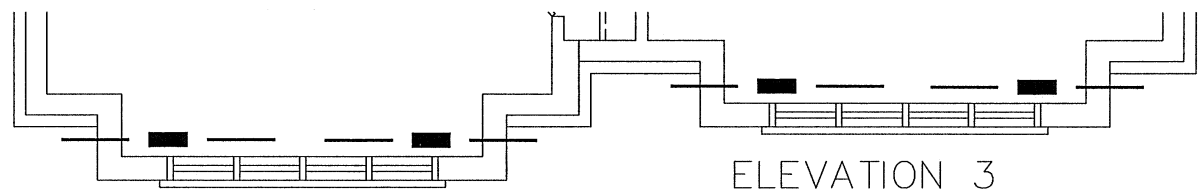
Date FEB/2019
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 81521



ELEVATION 1



ELEVATION 2



ELEVATION 3

Town of East Gwillimbury
Building Standards Branch BCIN #16487

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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
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Sheet Title
SECOND FLOOR HEATING LAYOUT

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LO# 81521