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 | LOT 30 | DATE: Dec-20 | WINTER NATURAL AIR CHANGE RATE 0.234 | HEAT LOSS ΔT °F. 81 | CSA-F280-12

BUILDER: GREENPARK HOMES | TYPE: GLENWAY 7A | GFA: 3314 | LO# 88661 | SUMMER NATURAL AIR CHANGE RATE 0.065 | HEAT GAIN ΔT °F. 11 | ENERGYSTAR

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			ENS-2			BED-5			S-ENS			ENS-3		
EXP. WALL			42			22			8			14			16			30			11			11			6			17		
CLG. HT.			9			9			9			9			9			9			9			9			9			9		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	378			198			72			126			144			270			99			99			54			153		
GLAZING			LOSS	GAIN		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	17	346	257	0	0	0	0	0	0	9	183	136	0	0	0	0	0	0	0	0	0
EAST	20.4	40.7	0	0	0	0	0	0	0	0	0	0	0	0	33	672	1344	34	692	1384	0	0	0	0	0	0	0	0	0	17	346	692
SOUTH	20.4	24.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	346	409	9	183	217	0	0	0
WEST	20.4	40.7	34	692	1384	15	305	611	0	0	0	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	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	0	0	0
NET EXPOSED WALL	3.9	0.5	344	1327	179	183	706	95	72	278	38	109	421	57	111	428	58	236	910	123	90	347	47	82	316	43	45	174	23	136	525	71
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	0	0	0
EXPOSED CLG	1.4	0.6	372	512	207	123	169	69	115	158	64	229	315	128	215	296	120	275	378	153	68	94	38	230	316	128	73	100	41	72	99	40
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	0	0	0	0	0	0
EXPOSED FLOOR	2.7	0.4	0	0	0	0	0	0	0	0	0	0	0	0	235	642	87	0	0	0	68	186	25	0	0	0	0	0	0	35	96	13
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0			0			0			0	
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			0			0			0	
SUBTOTAL HT LOSS				2530			1180			436			1081			2096			1980			810			979			457			1065	
SUB TOTAL HT GAIN					1771			775			102			442			1632			1661			246			580			281			816
LEVEL FACTOR / MULTIPLIER			0.20	0.25		0.20	0.25		0.20	0.25		0.20	0.25		0.20	0.25		0.20	0.25		0.20	0.25		0.20	0.25		0.20	0.25		0.20	0.25	
AIR CHANGE HEAT LOSS				634			296			109			271			525			496			203			245			115			267	
AIR CHANGE HEAT GAIN					105			46			6			26			97			99			15			34			17			48
DUCT LOSS				0			0			0			0			262			0			101			0			0			133	
DUCT GAIN					0			0			0			0			258			0			26			0			0			86
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0	1		240	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					613			0			0			613			613			613			0			613			0			0
TOTAL HT LOSS BTU/H				3165			1476			545			1352			2884			2477			1114			1224			572			1465	
TOTAL HT GAIN x 1.3 BTU/H					3860			1067			140			1717			3692			3396			373			1908			387			1236

ROOM USE				LV/DN			K/D/F			OFF			LAUN			PWD			FOY				BAS		
EXP. WALL				26			77			10			25			13			19				178		
CLG. HT.				11			11			11			12			12			12				9		
	FACTORS																								
GRS.WALL AREA	LOSS	GAIN		286			847			110			300			156			228				1068		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN	
NORTH	20.4	15.1		0	0	0	0	0	20	407	303	9	183	136	0	0	0	0	0	0			3	61	45
EAST	20.4	40.7		0	0	0	0	0	0	0	0	0	0	0	16	326	651	0	0	0			0	0	0
SOUTH	20.4	24.1		26	529	626	13	265	313	0	0	0	0	0	0	0	0	0	0	0			6	122	144
WEST	20.4	40.7		0	0	0	63	1282	2565	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	0	0
DOORS	27.0	3.7		0	0	0	30	811	110	0	0	0	20	541	73	0	0	0	40	1082	146		20	541	73
NET EXPOSED WALL	3.9	0.5		260	1003	136	741	2859	386	90	347	47	271	1045	141	140	540	73	188	725	98		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	0	0	0		534	2058	278
EXPOSED CLG	1.4	0.6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
NO ATTIC EXPOSED CLG	2.9	1.2		0	0	0	10	29	12	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		0	0	0
BASEMENT/CRAWL HEAT LOSS					0			0			0			0			0			0				6400	
SLAB ON GRADE HEAT LOSS					0			0			0			0			0			0					
SUBTOTAL HT LOSS					1532			5246			754			1769			866			1807				9243	
SUB TOTAL HT GAIN						761			3386			350			351			724			244				663
LEVEL FACTOR / MULTIPLIER				0.30	0.40		0.30	0.40		0.30	0.40		0.30	0.40		0.30	0.40		0.30	0.40			0.50	0.86	
AIR CHANGE HEAT LOSS					607			2078			299			701			343			716				7906	
AIR CHANGE HEAT GAIN						45			201			21			21			43			14				39
DUCT LOSS					0			0			0			0			0			0				0	
DUCT GAIN						0			0			0			0			0			0					0
HEAT GAIN PEOPLE	240			0		0	0		0	0		0	0		0	0		0	0		0			0		0
HEAT GAIN APPLIANCES/LIGHTS						613			613			613			613			0			0					613
TOTAL HT LOSS BTU/H					2139			7324			1053			2470			1209			2523				17149	
TOTAL HT GAIN x 1.3 BTU/H						1845			5460			1278			1280			998			336					1710

Town of East Gwillimbury
Building Standards Branch BCIN #16487

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Discipline	Reviewer	BCIN	Date
Building Code	H. Authier	43236	2021-02-03
Sewage System			
Zoning			

TOTAL HEAT GAIN BTU/H: 30966 | TONS: 2.58 | LOSS DUE TO VENTILATION LOAD BTU/H: 2097 | STRUCTURAL HEAT LOSS: 50142 | TOTAL COMBINED HEAT LOSS BTU/H: 52238

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

LOT 30
TYPE: GLENWAY 7A

DATE: Dec-20

GFA: 3314 LO# 88661

HEATING CFM	1131	COOLING CFM	1131
TOTAL HEAT LOSS	50,142	TOTAL HEAT GAIN	30,682
AIR FLOW RATE CFM	22.56	AIR FLOW RATE CFM	36.86

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

AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = **57,600**

FAN SPEED	
LOW	
MEDLOW	
MEDIUM	
MEDIUM HIGH	
HIGH	1131

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	5	3	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	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	BED-5	S-ENS	MBR	ENS-3	BED-3
RM LOSS MBH.	1.58	1.48	0.55	1.35	1.44	1.24	1.11	1.22	0.57	1.58	1.47	1.44
CFM PER RUN HEAT	36	33	12	31	33	28	25	28	13	36	33	33
RM GAIN MBH.	1.93	1.07	0.14	1.72	1.85	1.70	0.37	1.91	0.39	1.93	1.24	1.85
CFM PER RUN COOLING	71	39	5	63	68	63	14	70	14	71	46	68
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.	62	54	42	42	54	50	51	20	46	51	51	54
EQUIVALENT LENGTH	170	160	160	140	120	170	140	190	160	150	130	110
TOTAL EFFECTIVE LENGTH	232	214	202	182	174	220	191	210	206	201	181	164
ADJUSTED PRESSURE	0.07	0.08	0.09	0.09	0.1	0.08	0.09	0.08	0.08	0.09	0.1	0.1
ROUND DUCT SIZE	**6**	5	4	**6**	5	5	4	**6**	4	**6**	5	5
HEATING VELOCITY (ft/min)	184	242	138	158	242	206	287	143	149	184	242	242
COOLING VELOCITY (ft/min)	362	286	57	321	499	463	161	357	161	362	338	499
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10
TRUNK	A	B	B	B	D	C	D	B	D	A	D	D

RUN #	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	LV/DN	K/D/F	K/D/F	OFF	LAUN	PWD	FOY	K/D/F	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.14	2.44	2.44	1.05	2.47	1.21	2.52	2.44	4.29	4.29	4.29	4.29
CFM PER RUN HEAT	48	55	55	24	56	27	57	55	97	97	97	97
RM GAIN MBH.	1.85	1.82	1.82	1.28	1.28	1.00	0.34	1.82	0.43	0.43	0.43	0.43
CFM PER RUN COOLING	68	67	67	47	47	37	12	67	16	16	16	16
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	7	47	42	30	28	27	38	48	46	45	24	18
EQUIVALENT LENGTH	150	130	140	130	170	100	100	150	150	100	140	110
TOTAL EFFECTIVE LENGTH	157	177	182	160	198	127	138	198	196	145	164	128
ADJUSTED PRESSURE	0.11	0.1	0.09	0.11	0.09	0.14	0.12	0.09	0.08	0.11	0.1	0.13
ROUND DUCT SIZE	**6**	5	5	5	5	4	**6**	5	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	245	404	404	176	411	310	291	404	495	495	495	495
COOLING VELOCITY (ft/min)	347	492	492	345	345	424	61	492	82	82	82	82
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	A	A	B	D	C	C	A	A	B	B	D

RUN #	25
ROOM NAME	BED-4
RM LOSS MBH.	1.24
CFM PER RUN HEAT	28
RM GAIN MBH.	1.70
CFM PER RUN COOLING	63
ADJUSTED PRESSURE	0.17
ACTUAL DUCT LGH.	44
EQUIVALENT LENGTH	180
TOTAL EFFECTIVE LENGTH	224
ADJUSTED PRESSURE	0.08
ROUND DUCT SIZE	5
HEATING VELOCITY (ft/min)	206
COOLING VELOCITY (ft/min)	463
OUTLET GRILL SIZE	3X10
TRUNK	C

Town of East Gwillimbury
Building Standards Branch BCIN #16487

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Discipline	Reviewer	BCIN	Date
Building Code	H. Authier	43236	2021-02-03
Sewage System			
Zoning			

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	334	0.07	9.6	12	x	8	501
TRUNK B	656	0.07	12.4	18	x	8	656
TRUNK C	140	0.08	6.7	8	x	8	315
TRUNK D	478	0.08	10.6	14	x	8	615
TRUNK E	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0
TRUNK G	0	0.00	0	0	x	8	0
TRUNK H	0	0.00	0	0	x	8	0
TRUNK I	0	0.00	0	0	x	8	0
TRUNK J	0	0.00	0	0	x	8	0
TRUNK K	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	425	0.05	11.5	16	x	8	478
TRUNK X	1131	0.05	16.5	32	x	8	636
TRUNK Y	440	0.05	11.6	16	x	8	495
TRUNK Z	270	0.05	9.7	12	x	8	405
DROP	1131	0.05	16.5	24	x	10	679

RETURN AIR #	1	2	3	4	5	6	7	8								**BR**
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	115	85	115	85	85	155	155	155	0	0	0	0	0	0	0	181
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	56	51	54	36	35	33	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	205	185	225	205	185	210	205	210	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	266	233	281	256	239	246	240	243	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.06	0.06	0.05	0.06	0.06	0.06	0.06	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	6.7	6	7	6	6	7.5	7.5	7.5	0	0	0	0	0	0	0	7
INLET GRILL SIZE	8	8	8	8	8	8	8	8	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	14	14	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

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TYPE: GLENWAY 7A LO # 88661
SITE NAME: TRINAR HALL HOMES LOT 30

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	6	@ 10.6 cfm	63.6	cfm
Other Rooms	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.		TOTAL	212.0	cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED 9.32.3.4.(1)

1	Bedroom	31.8	cfm
2	Bedroom	47.7	cfm
3	Bedroom	63.6	cfm
4	Bedroom	79.5	cfm
5	Bedroom	95.4	cfm
	TOTAL	**95.4**	**cfm**

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	212	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	116.6	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	81 F	X	1.08	X	0.25

SUPPLEMENTAL FANS PANASONIC

Location	Model	cfm	HVI	Sones
ENS	FV-05-11VK1	50	✓	0.3
ENS-2	FV-05-11VK1	50	✓	0.3
ENS-3	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 #:

Town of East Gwillimbury
Building Standards Branch BCIN #16487

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Discipline	Reviewer	BCIN	Date
Building Code	H. Authier	43236	2021-02-03
Sewage System			
Zoning			

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: December-20

I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

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

HVAC DESIGNS LTD.

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#: 88661 Model: GLENWAY 7A Builder: GREENPARK HOMES Date: 14/12/2020

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1502	9	13518
First	1502	11	16522
Second	1822	9	16398
Third	0	9	0
Fourth	0	9	0
		Total:	46,438.0 ft³
		Total:	1315.0 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.234
SUMMER NATURAL AIR CHANGE RATE	0.065

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

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

0.234 x 365.27 x 45 °C x 1.2 = 4634 W

= **15813 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.065 x 365.27 x 6 °C x 1.2 = 174 W

= **594 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 81 °F x 1.08 x 0.25 = **2097 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	15,813	9,243	0.855
2	0.3		11,974	0.396
3	0.2		12,615	0.251
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
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: GLENWAY 7A LOT 30 **BUILDER:** GREENPARK HOMES
SFQT: 3314 **LO#** 88661 **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):	46438.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
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: 54.0 ft	WIDTH: 35.0 ft	EXPOSED PERIMETER:	178.0 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

Town of East Gwillimbury
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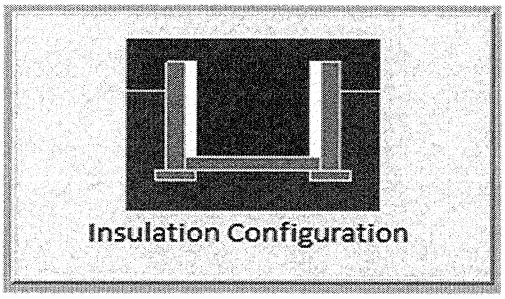
Discipline	Reviewer	BCIN	Date
Building Code	H. Authier	43236	2021-02-03
Sewage System			
Zoning			

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):	**16.5**	 Insulation Configuration
Floor Width (m):	**10.7**	
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):	**1875**	

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Sewage System			
Zoning			

TYPE: GLENWAY 7A LOT 30
LO# 88661

HVAC Designs Ltd.
375 Finley Ave, Suite 202
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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):	7.01

Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	1315.0

Air Leakage/Ventilation		
Air Tightness Type:	Energy Star Detached (2.5 AC	
Custom BDT Data:	ELA @ 10 Pa.	1227.5 cm^2
	2.50	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust
	45.0	45.0

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

Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.234**
Cooling Air Leakage Rate (ACH/H):	**0.065**

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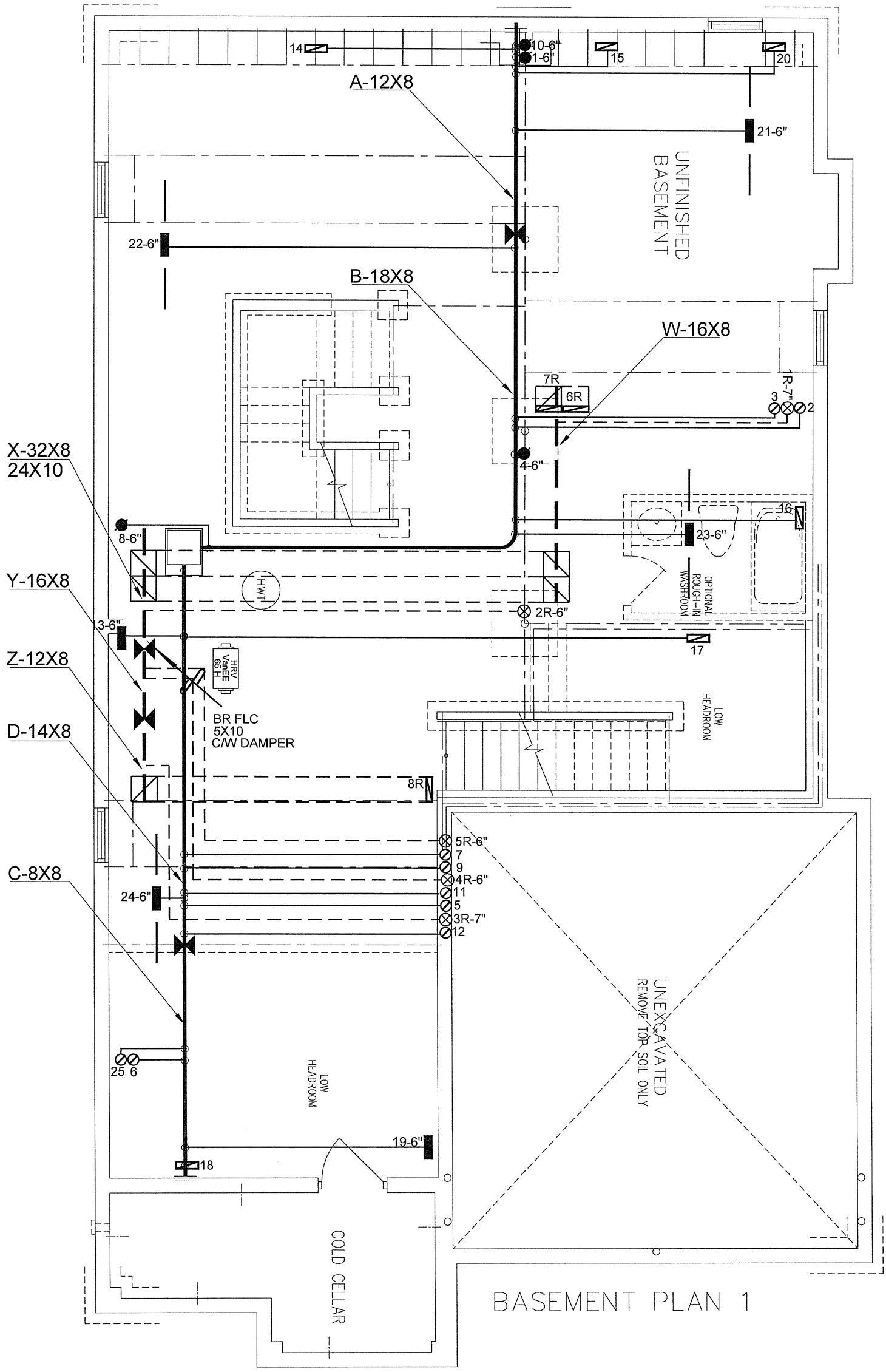
Zoning			

TYPE: GLENWAY 7A LOT 30
LO# 88661



BASEMENT PLAN 1

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.

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Sewage System			
Zoning			

LOT 30

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.

LOT 30
GLENWAY 7A 3314 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 52238 BTU/H	
UNIT DATA	
MAKE	GOODMAN
MODEL	GMEC960603BNA
INPUT	60 MBTU/H
OUTPUT	57.6 MBTU/H
COOLING	3.0 TONS
FAN SPEED	1131 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	13	5	4
1ST FLOOR	8	3	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

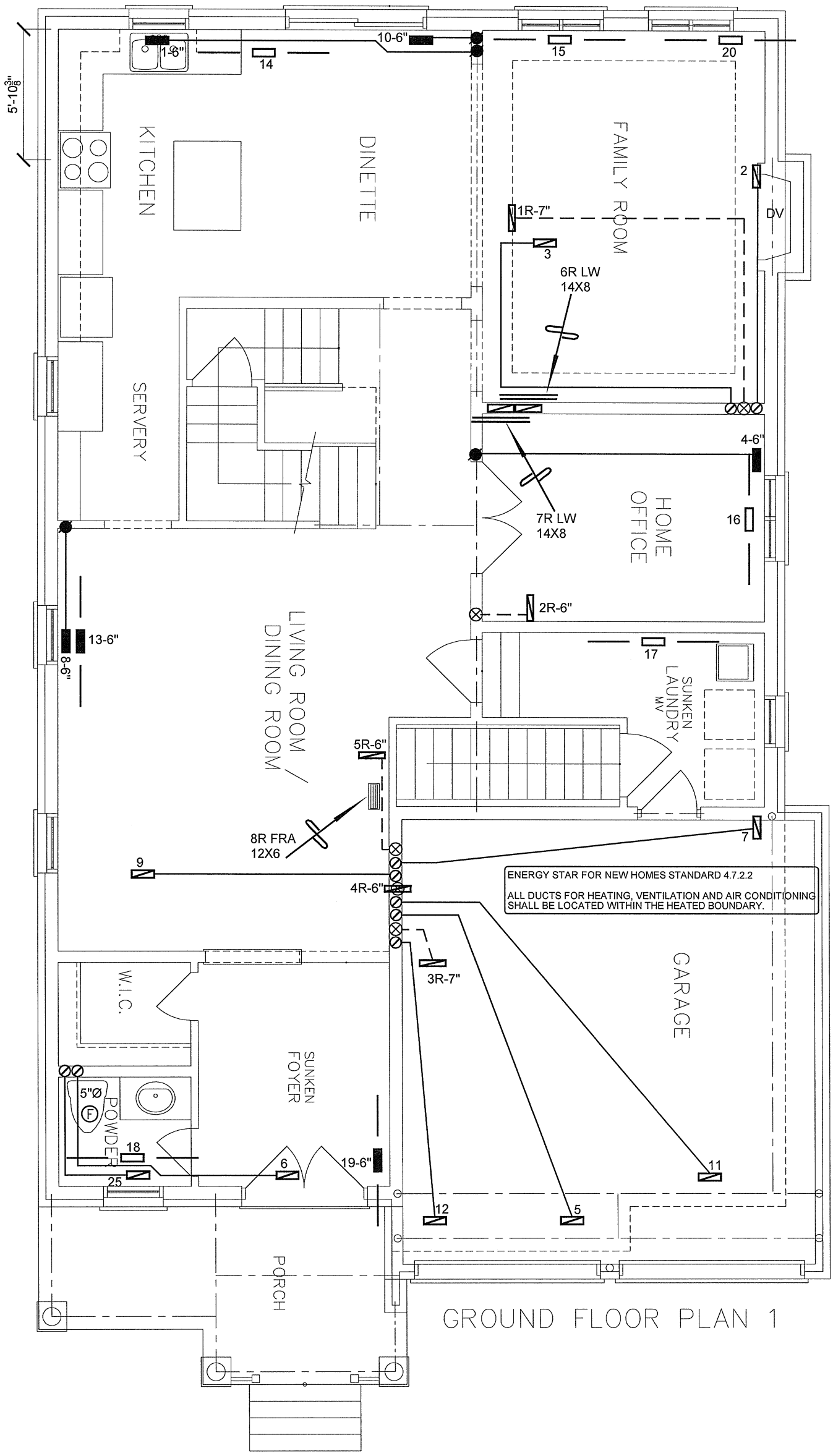
BASEMENT HEATING LAYOUT

Date DEC/2020

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 88661



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LOT 30
CSA-F280-12

ENERGY STAR

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
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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

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GREENPARK HOMES

Project Name
TRINAR HALL HOMES
EAST GWILLIMBURY, ONT.

LOT 30
GLENWAY 7A 3314 sqft

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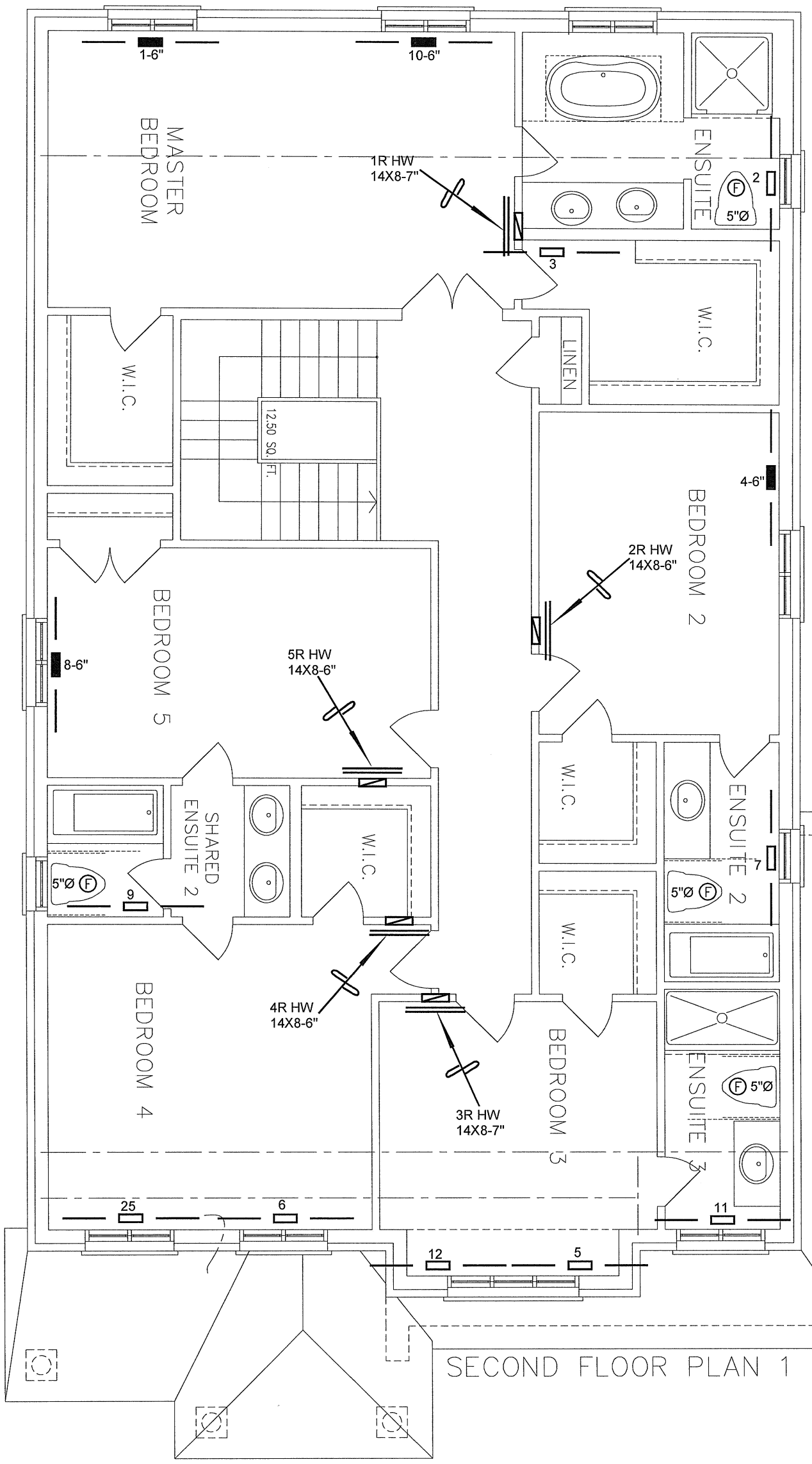
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date DEC/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 88661



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LOT 30

CSA-F280-12

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HVAC LEGEND

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	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER

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Sheet Title

SECOND FLOOR HEATING LAYOUT

Date DEC/2020

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 88661