


SITE NAME: TRINAR HALL HOMES				LOT 31				DATE: Dec-20				WINTER NATURAL AIR CHANGE RATE 0.234				HEAT LOSS ΔT °F. 81				CSA-F280-12			
BUILDER: GREENPARK HOMES				TYPE: GLENWAY 3A				LO# 88662				SUMMER NATURAL AIR CHANGE RATE 0.065				HEAT GAIN ΔT °F. 11				ENERGYSTAR			
ROOM USE				MBR				ENS				BED-2				BED-3				BED-4			
EXP. WALL				42				22				32				40				12			
CLG. HT.				9				9				9				9				9			
FACTORS																							
GRS.WALL AREA				378				198				288				360				108			
GLAZING				LOSS GAIN				LOSS GAIN				LOSS GAIN				LOSS GAIN				LOSS GAIN			
NORTH				20.4 15.1 5 102 76 0 0 0 0				20.4 15.1 5 102 76 0 0 0 0				20.4 15.1 5 102 76 0 0 0 0				20.4 15.1 5 102 76 0 0 0 0				20.4 15.1 5 102 76 0 0 0 0			
EAST				20.4 40.7 0 0 0 0 0 0 0				20.4 40.7 0 0 0 0 0 0 0				20.4 40.7 0 0 0 0 0 0 0				20.4 40.7 0 0 0 0 0 0 0				20.4 40.7 0 0 0 0 0 0 0			
SOUTH				20.4 24.1 0 0 0 0 7 142 168				20.4 24.1 0 0 0 0 7 142 168				20.4 24.1 0 0 0 0 7 142 168				20.4 24.1 0 0 0 0 7 142 168				20.4 24.1 0 0 0 0 7 142 168			
WEST				20.4 40.7 30 611 1222 12 244 489				20.4 40.7 30 611 1222 12 244 489				20.4 40.7 30 611 1222 12 244 489				20.4 40.7 30 611 1222 12 244 489				20.4 40.7 30 611 1222 12 244 489			
SKYLT.				34.2 99.9 0 0 0 0 0 0 0				34.2 99.9 0 0 0 0 0 0 0				34.2 99.9 0 0 0 0 0 0 0				34.2 99.9 0 0 0 0 0 0 0				34.2 99.9 0 0 0 0 0 0 0			
DOORS				27.0 3.7 0 0 0 0 0 0 0				27.0 3.7 0 0 0 0 0 0 0				27.0 3.7 0 0 0 0 0 0 0				27.0 3.7 0 0 0 0 0 0 0				27.0 3.7 0 0 0 0 0 0 0			
NET EXPOSED WALL				3.9 0.5 343 1323 179 179 691 93				3.9 0.5 343 1323 179 179 691 93				3.9 0.5 343 1323 179 179 691 93				3.9 0.5 343 1323 179 179 691 93				3.9 0.5 343 1323 179 179 691 93			
NET EXPOSED BSMT WALL ABOVE GR				3.9 0.5 0 0 0 0 0 0 0				3.9 0.5 0 0 0 0 0 0 0				3.9 0.5 0 0 0 0 0 0 0				3.9 0.5 0 0 0 0 0 0 0				3.9 0.5 0 0 0 0 0 0 0			
EXPOSED CLG				1.4 0.6 500 688 279 123 169 69				1.4 0.6 500 688 279 123 169 69				1.4 0.6 500 688 279 123 169 69				1.4 0.6 500 688 279 123 169 69				1.4 0.6 500 688 279 123 169 69			
NO ATTIC EXPOSED CLG				2.9 1.2 0 0 0 0 0 0 0				2.9 1.2 0 0 0 0 0 0 0				2.9 1.2 0 0 0 0 0 0 0				2.9 1.2 0 0 0 0 0 0 0				2.9 1.2 0 0 0 0 0 0 0			
EXPOSED FLOOR				2.7 0.4 0 0 0 0 0 0 0				2.7 0.4 0 0 0 0 0 0 0				2.7 0.4 0 0 0 0 0 0 0				2.7 0.4 0 0 0 0 0 0 0				2.7 0.4 0 0 0 0 0 0 0			
BASEMENT/CRAWL HEAT LOSS				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 0 0 0 0 0			
SLAB ON GRADE HEAT LOSS				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 0 0 0 0 0			
SUBTOTAL HT LOSS				2723				1246				2870				2501				918			
SUB TOTAL HT GAIN				1755				819				1941				2012				513			
LEVEL FACTOR / MULTIPLIER				0.20 0.23				0.20 0.23				0.20 0.23				0.20 0.23				0.20 0.23			
AIR CHANGE HEAT LOSS				623				285				657				573				210			
AIR CHANGE HEAT GAIN				87				41				97				100				26			
DUCT LOSS				0				0				353				0				98			
DUCT GAIN				0				0				287				0				30			
HEAT GAIN PEOPLE				240				0				1				240				0			
HEAT GAIN APPLIANCES/LIGHTS				2				593				593				593				0			
TOTAL HT LOSS BTU/H				3346				1532				3879				3073				1129			
TOTAL HT GAIN x 1.3 BTU/H				3789				1118				4104				3829				1782			

ROOM USE			KT/FM			LV/DN			OFF			PWD			FOY			LAUN			BAS		
EXP. WALL			71			33			23			7			23			25			176		
CLG. HT.			11			11			12			12			12			13			9		
FACTORS																							
GRS.WALL AREA			781			363			276			84			276			325			1056		
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 0			0 0 0			0 0 0			0 0 0			5 102 76		
EAST			20.4 40.7			0 0 0			27 549 1099			0 0 0			0 0 0			0 0 0			0 0 0		
SOUTH			20.4 24.1			0 0 0			0 0 0			7 142 168			0 0 0			0 0 0			10 204 241		
WEST			20.4 40.7			78 1587 3176			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		
DOORS			27.0 3.7			0 0 0			0 0 0			0 0 0			40 1082 146			20 541 73			20 541 73		
NET EXPOSED WALL			3.9 0.5			703 2712 366			325 1254 169			249 961 130			77 297 40			236 910 123			305 1177 159		
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		
EXPPOSED 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			65 191 77			0 0 0			0 0 0			0 0 0			30 88 36			528 2035 275		
EXPPOSED 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 0			0 0			0 0			0 0 0		
SLAB ON GRADE HEAT LOSS						0 0			0 0			0 0			0 0			0 0			0 0 0		
SUBTOTAL HT LOSS						4490			2027			1510			440			1992			1806		
SUB TOTAL HT GAIN						3620			1084			1229			209			269			268		
LEVEL FACTOR / MULTIPLIER			0.30 0.34			0.30 0.34			0.30 0.34			0.30 0.34			0.30 0.34			0.30 0.34			0.50 0.75		
AIR CHANGE HEAT LOSS			1513			683			509			148			671			608			6887		
AIR CHANGE HEAT GAIN			180			54			61			10			13			13			33		
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		
HEAT GAIN APPLIANCES/LIGHTS			593			593			593			593			0			593			593		
TOTAL HT LOSS BTU/H			6003			2710			2019			588			2663			2414			16061		
TOTAL HT GAIN x 1.3 BTU/H			5710			2250			2448			285			367			1136			1677		



1056

LOSS GAIN

5 102 76

0 0 0

10 204 241

0 0 0

0 0 0

20 541 73

0 0 0

528 2035 275

0 0 0

0 0 0

6293

9174

664

33

0

0

593

16061

1677

1056

LOSS GAIN

5 102 76

0 0 0

10 204 241

0 0 0

0 0 0

20 541 73

0 0 0

528 2035 275

0 0 0

0 0 0

6293

9174

664

33

0

0

593

16061

1677

These plans have been reviewed for use with the corrections as noted. No other changes may be made without written approval of the Building Standards Branch. All work must comply with Zoning By-Law 2018-043, as amended, and the Ontario Building Code, as amended. These approved documents must be kept on site at all times. The building permit must be clearly posted on site at all times.

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

SITE NAME: TRINAR HALL HOMES  
BUILDER: GREENPARK HOMES

LOT 31  
TYPE: GLENWAY 3A

DATE: Dec-20

GFA: 2869 LO# 88662

HEATING CFM 1131 COOLING CFM 1131  
TOTAL HEAT LOSS 47,696 TOTAL HEAT GAIN 29,563  
AIR FLOW RATE CFM 23.71 AIR FLOW RATE CFM 38.26

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	11	9	4
R/A	0	0	4	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	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	BED-2	BED-3	BED-4	BATH	ENS-3	BED-2	MBR	ENS-4	BED-3	KT/FM	KT/FM	KT/FM	LV/DN	OFF	PWD	FOY	LAUN	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.67	1.53	1.94	1.54	1.13	1.08	0.58	1.94	1.67	0.62	1.54	2.00	2.00	2.00	2.71	1.01	0.59	2.66	2.41	4.02	4.02	4.02	4.02
CFM PER RUN HEAT	40	36	46	36	27	26	14	46	40	15	36	47	47	47	64	24	14	63	57	95	95	95	95
RM GAIN MBH.	1.89	1.12	2.05	1.91	1.78	0.42	0.32	2.05	1.89	0.33	1.91	1.90	1.90	1.90	2.25	1.22	0.28	0.37	1.14	0.42	0.42	0.42	0.42
CFM PER RUN COOLING	72	43	79	73	68	16	12	79	72	12	73	73	73	73	86	47	11	14	43	16	16	16	16
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	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	37	19	60	55	52	55	41	55	44	17	57	19	38	44	19	39	30	47	37	14	42	8	40
EQUIVALENT LENGTH	190	210	120	150	140	120	190	120	190	200	190	140	120	110	110	130	180	140	160	150	110	140	150
TOTAL EFFECTIVE LENGTH	227	229	180	205	192	175	231	175	234	217	247	159	158	154	129	169	210	187	197	164	152	148	190
ADJUSTED PRESSURE	0.08	0.08	0.1	0.08	0.09	0.1	0.07	0.1	0.07	0.08	0.07	0.11	0.11	0.11	0.13	0.1	0.08	0.09	0.09	0.1	0.11	0.11	0.09
ROUND DUCT SIZE	6	5	6	6	6	4	4	6	6	4	6	5	5	5	6	4	4	5	5	6	6	6	6
HEATING VELOCITY (ft/min)	204	264	235	184	138	298	161	235	204	172	184	345	345	345	326	275	161	463	419	484	484	484	484
COOLING VELOCITY (ft/min)	367	316	403	372	347	184	138	403	367	138	372	536	536	536	438	539	126	103	316	82	82	82	82
OUTLET GRILL SIZE	4X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	C	C	B	C	C	B	C	A	C	B	A	A	A	C	B	B	B	C	A	A	C	D

RUN #	25
ROOM NAME	OFF
RM LOSS MBH.	1.01
CFM PER RUN HEAT	24
RM GAIN MBH.	1.22
CFM PER RUN COOLING	47
ADJUSTED PRESSURE	0.17
ACTUAL DUCT LGH.	43
EQUIVALENT LENGTH	130
TOTAL EFFECTIVE LENGTH	173
ADJUSTED PRESSURE	0.1
ROUND DUCT SIZE	4
HEATING VELOCITY (ft/min)	275
COOLING VELOCITY (ft/min)	539
OUTLET GRILL SIZE	3X10
TRUNK	B



These plans have been reviewed for use with the corrections as noted. No other changes may be made without written approval of the Building Standards Branch. All work must comply with Zoning By-Law 2018-043, as amended, and the Ontario Building Code, as amended. These approved documents must be kept on site at all times. The building permit must be clearly posted on site at all times.

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

SUPPLY AIR TRUNK SIZE														RETURN 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 CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)			
TRUNK A	411	0.07	10.4	12	x	8	617	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.05	0	0	x	8	0
TRUNK B	306	0.07	9.3	10	x	8	551	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.05	0	0	x	8	0
TRUNK C	718	0.07	12.8	20	x	8	646	TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.05	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 R	0	0.05	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 S	0	0.05	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	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	315	0.05	10.2	12	x	8	473	
															TRUNK X	1131	0.05	16.5	32	x	8	636	
															TRUNK Y	635	0.05	13.3	20	x	8	572	
															TRUNK Z	360	0.05	10.8	14	x	8	463	
															DROP	1131	0.05	16.5	24	x	10	679	

RETURN AIR #	1	2	3	4	5	6	7									BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	130	85	115	75	185	275	85	0	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.	38	57	63	61	28	38	41	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	185	265	225	150	190	225	0	0	0	0	0	0	0	0	175
TOTAL EFFECTIVE LH	213	242	328	286	178	228	266	1	1	1	1	1	1	1	1	189
ADJUSTED PRESSURE	0.07	0.06	0.05	0.05	0.08	0.06	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.08
ROUND DUCT SIZE	6.8	6	7	6	7.5	9.3	6	0	0	0	0	0	0	0	0	7.4
INLET GRILL SIZE	8	8	8	8	8	8	8	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	30	14	0	0	0	0	0	0	0	0	14

TYPE: GLENWAY 3A  
SITE NAME: TRINAR HALL HOMES

LO # 88662  
LOT 31

**RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY**

COMBUSTION APPLIANCES		9.32.3.1(1)
a)	<input checked="" type="checkbox"/> Direct vent (sealed combustion) only	
b)	<input type="checkbox"/> Positive venting induced draft (except fireplaces)	
c)	<input type="checkbox"/> Natural draft, B-vent or induced draft gas fireplace	
d)	<input type="checkbox"/> Solid Fuel (including fireplaces)	
e)	<input type="checkbox"/> No Combustion Appliances	

HEATING SYSTEM	
<input checked="" type="checkbox"/> Forced Air	<input type="checkbox"/> Non Forced Air
<input type="checkbox"/> Electric Space Heat	

HOUSE TYPE		9.32.1(2)
<input checked="" type="checkbox"/> I	Type a) or b) appliance only, no solid fuel	
<input type="checkbox"/> II	Type I except with solid fuel (including fireplaces)	
<input type="checkbox"/> III	Any Type c) appliance	
<input type="checkbox"/> IV	Type I, or II with electric space heat	
<input type="checkbox"/>	Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS		O.N.H.W.P.
<input type="checkbox"/> 1	Exhaust only/Forced Air System	
<input type="checkbox"/> 2	HRV with Ducting/Forced Air System	
<input checked="" type="checkbox"/> 3	HRV Simplified/connected to forced air system	
<input type="checkbox"/> 4	HRV with Ducting/non forced air system	
<input type="checkbox"/>	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	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	79.5	cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	201.4	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	121.9	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
79.5 cfm	3.0 sones
<input checked="" type="checkbox"/>	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
ENS	FV-05-11VK1	50	<input checked="" type="checkbox"/>
BATH	FV-05-11VK1	50	<input checked="" type="checkbox"/>
ENS-4	FV-05-11VK1	50	<input checked="" type="checkbox"/>
PWD	FV-05-11VK1	50	<input checked="" type="checkbox"/>

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
155 cfm high	64 cfm low	
75 % Sensible Efficiency	<input checked="" type="checkbox"/>	HVI Approved
@ 32 deg F ( 0 deg C)		

LOCATION OF INSTALLATION	
Lot:	Concession
Township	Plan:
Address	
Roll #	Building Permit #

BUILDER: GREENPARK HOMES



Name:

Address:

City:

Telephone #:

Fax #:

These plans have been reviewed for use with the corrections as noted. No other changes may be made without written approval of the Building Standards Branch. All work must comply with Zoning By-Law 2018-043, as amended, and the Ontario Building Code, as amended. These approved documents must be kept on site at all times. The building permit must be clearly posted on site at all times.

**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:

HRAI #

001820

Date:

December-20

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																
LO#: 88662	Model: GLENWAY 3A	Builder: GREENPARK HOMES	Date: 14/12/2020																																																													
<b>Volume Calculation</b>			<b>Air Change &amp; Delta T Data</b>																																																													
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">House Volume</th> </tr> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr><td>Bsmt</td><td>1330</td><td>9</td><td>11970</td></tr> <tr><td>First</td><td>1330</td><td>11</td><td>14630</td></tr> <tr><td>Second</td><td>1539</td><td>9</td><td>13851</td></tr> <tr><td>Third</td><td>0</td><td>9</td><td>0</td></tr> <tr><td>Fourth</td><td>0</td><td>9</td><td>0</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>40,451.0 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>1145.4 m³</td></tr> </tbody> </table>			House Volume				Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1330	9	11970	First	1330	11	14630	Second	1539	9	13851	Third	0	9	0	Fourth	0	9	0	Total:			40,451.0 ft³	Total:			1145.4 m³	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 20%;">0.234</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.065</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> </thead> <tbody> <tr> <td>Winter DTDh</td> <td>22</td> <td>-23</td> <td>45</td> <td>81</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>30</td> <td>6</td> <td>11</td> </tr> </tbody> </table>		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
House Volume																																																																
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																													
Bsmt	1330	9	11970																																																													
First	1330	11	14630																																																													
Second	1539	9	13851																																																													
Third	0	9	0																																																													
Fourth	0	9	0																																																													
Total:			40,451.0 ft³																																																													
Total:			1145.4 m³																																																													
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																																																												
<b>5.2.3.1 Heat Loss due to Air Leakage</b>			<b>6.2.6 Sensible Gain due to Air Leakage</b>																																																													
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ <p>0.234 x 318.18 x 45 °C x 1.2 = 4037 W</p> <p>= 13774 Btu/h</p>			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ <p>0.065 x 318.18 x 6 °C x 1.2 = 152 W</p> <p>= 518 Btu/h</p>																																																													
<b>5.2.3.2 Heat Loss due to Mechanical Ventilation</b>			<b>6.2.7 Sensible heat Gain due to Ventilation</b>																																																													
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>80 CFM x 81 °F x 1.08 x 0.25 = 1747 Btu/h</p>			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>80 CFM x 11 °F x 1.08 x 0.25 = 236 Btu/h</p>																																																													
<b>5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)</b>																																																																
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																																
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL <sub>clevel</sub> )	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																												
1	0.5	13,774	9,174	0.751																																																												
2	0.3		12,265	0.337																																																												
3	0.2		12,033	0.229																																																												
4	0		0	0.000																																																												
5	0		0	0.000																																																												
<p>*HLairbv = Air leakage heat loss + ventilation heat loss</p> <p>*For a balanced or supply only ventilation system HLairve = 0</p>																																																																



These plans have been reviewed for use with the corrections as noted. No other changes may be made without written approval of the Building Standards Branch. All work must comply with Zoning By-Law 2018-043, as amended, and the Ontario Building Code, as amended. These approved documents must be kept on site at all times. The building permit must be clearly posted on site at all times.

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

## HEAT LOSS AND GAIN SUMMARY SHEET

<b>MODEL:</b>	GLENWAY 3A	<b>LOT 31</b>	<b>BUILDER:</b>	GREENPARK HOMES
<b>SFQT:</b>	2869	<b>LO#</b>	88662	<b>SITE:</b> 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 <sup>3</sup> ):	40451.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft <sup>2</sup> ):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 54.0 ft	WIDTH: 34.0 ft	EXPOSED PERIMETER:	176.0 ft

2012 OBC - COMPLIANCE PACKAGE		Compliance Package	
Component		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	-



These plans have been reviewed for use with the corrections as noted. No other changes may be made without written approval of the Building Standards Branch. All work must comply with Zoning By-Law 2018-043, as amended, and the Ontario Building Code, as amended. These approved documents must be kept on site at all times. The building permit must be clearly posted on site at all times.

*Michael O'Rourke*

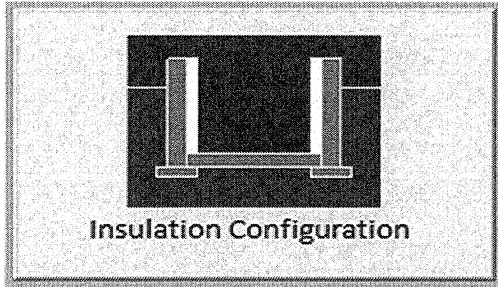
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

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

## 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	 <p>Insulation Configuration</p>
Floor Width (m):	10.4	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m <sup>2</sup> ):	1.4	
Door Area (m <sup>2</sup> ):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1844



These plans have been reviewed for use with the corrections as noted. No other changes may be made without written approval of the Building Standards Branch. All work must comply with Zoning By-Law 2018-043, as amended, and the Ontario Building Code, as amended. These approved documents must be kept on site at all times. The building permit must be clearly posted on site at all times.

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

TYPE: GLENWAY 3A  
LO# 88662

LOT 31



# 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 <sup>3</sup> ):	1145.4		
Air Leakage/Ventilation			
Air Tightness Type:	Energy Star Detached (2.5 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1069.3 cm <sup>2</sup>	
	2.50	ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust	
	37.5	37.5	
Flue Size			
Flue #:	#1	#2	#3
Diameter (mm):	0	0	0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.234		
Cooling Air Leakage Rate (ACH/H):	0.065		

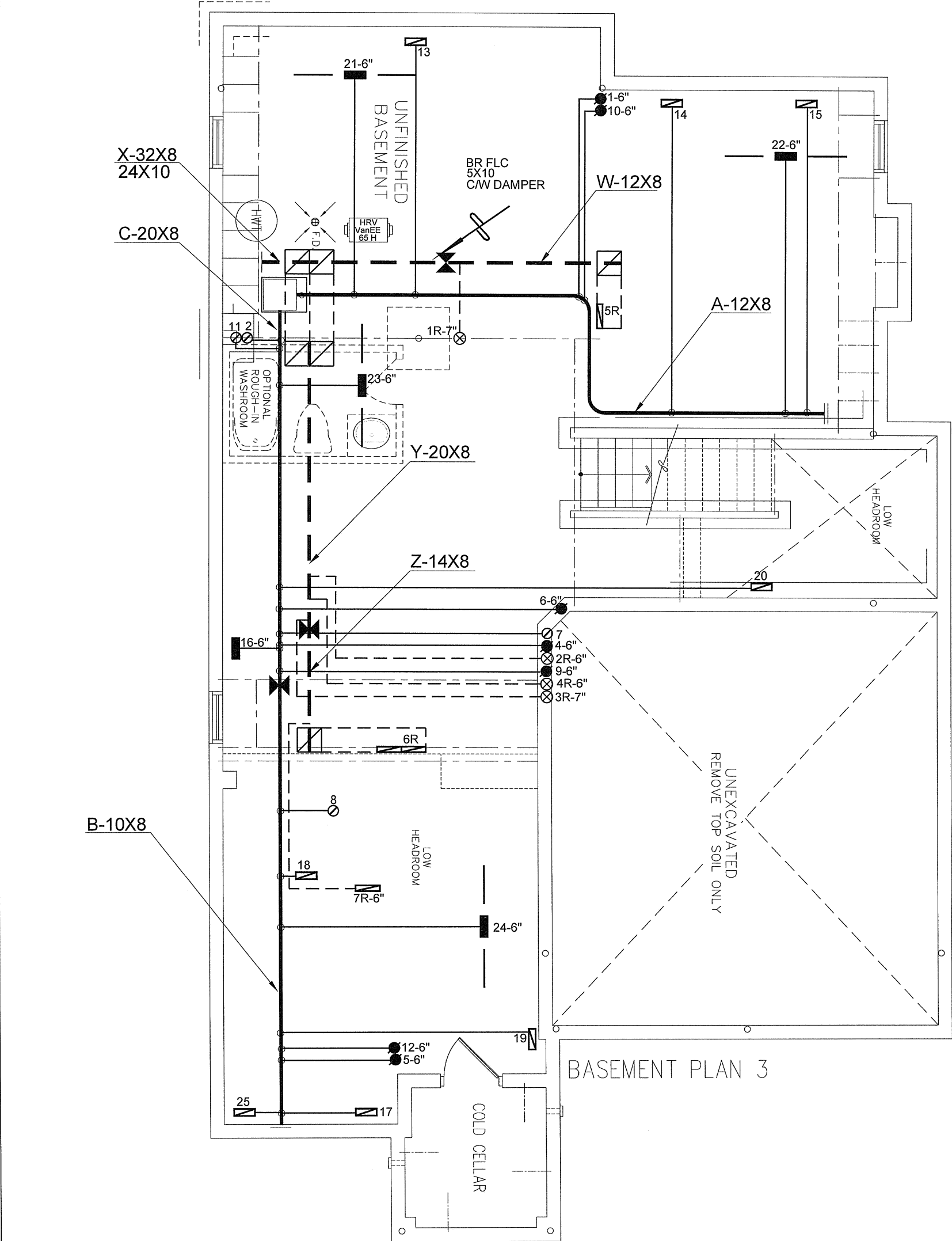



These plans have been reviewed for use with the corrections as noted. No other changes may be made without written approval of the Building Standards Branch. All work must comply with Zoning By-Law 2018-043, as amended, and the Ontario Building Code, as amended. These approved documents must be kept on site at all times. The building permit must be clearly posted on site at all times.

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

TYPE: GLENWAY 3A  
LO# 88662

LOT 31





Town of

East Gwillimbury

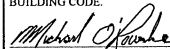
Building Standards Branch BCIN #16487

These plans have been reviewed for use with the corrections as noted. No other changes may be made without written approval of the Building Standards Branch. All work must comply with Zoning By-Law 2018-043, as amended, and the Ontario Building Code, as amended. These approved documents must be kept on site at all times. The building permit must be clearly posted on site at all times.

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


BASEMENT PLAN 3

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.

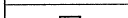
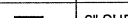
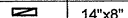



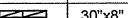



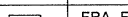

  
Michael O'Rourke, BCIN# 19669  
HVAC DESIGNS LTD.

LOT 31

CSA-F280-12



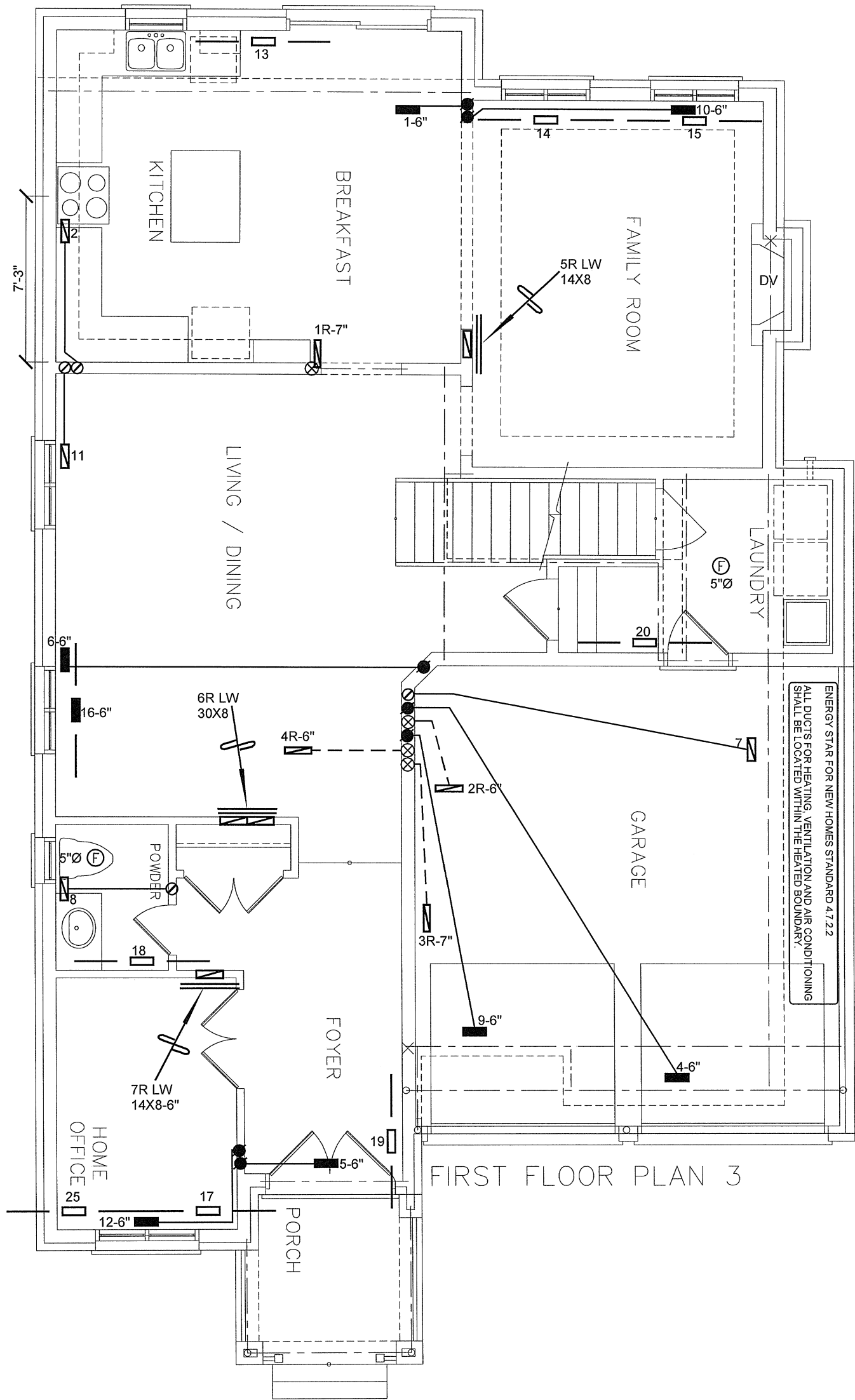
ENERGY STAR

HVAC LEGEND						3.		
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	2.
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	1.
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	No.
REVISIONS								
Description								Date

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Client <b>GREENPARK HOMES</b>		<div></div> <div>375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services</div>	HEAT LOSS 49443 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title <b>BASEMENT HEATING LAYOUT</b>		
Project Name <b>TRINAR HALL HOMES EAST GWILLIMBURY, ONT.</b>			MAKE GOODMAN		3RD FLOOR						
			MODEL GMEC960603BNA		2ND FLOOR		11	4			4
			INPUT 60 MBTU/H		1ST FLOOR		9	3			2
LOT 31 GLENWAY 3A 2869 sqft		OUTPUT 57.6 MBTU/H		BASEMENT		4	1	0	Date	DEC/2020	
		COOLING 2.5 TONS		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						Scale	3/16" = 1'-0"
		FAN SPEED 1131 cfm @ 0.6" w.c.								BCIN# 19669	
										LO#	88662





These plans have been reviewed for use with the corrections as noted. No other changes may be made without written approval of the Building Standards Branch. All work must comply with Zoning By-Law 2018-043, as amended, and the Ontario Building Code, as amended. These approved documents must be kept on site at all times. The building permit must be clearly posted on site at all times.

Discipline	Reviewer	BCIN	Date
Building Code	H. Authier	43236	2021-02-03
Sewage System			
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*  
Michael O'Rourke, BCIN# 19669  
HVAC DESIGNS LTD.

LOT 31

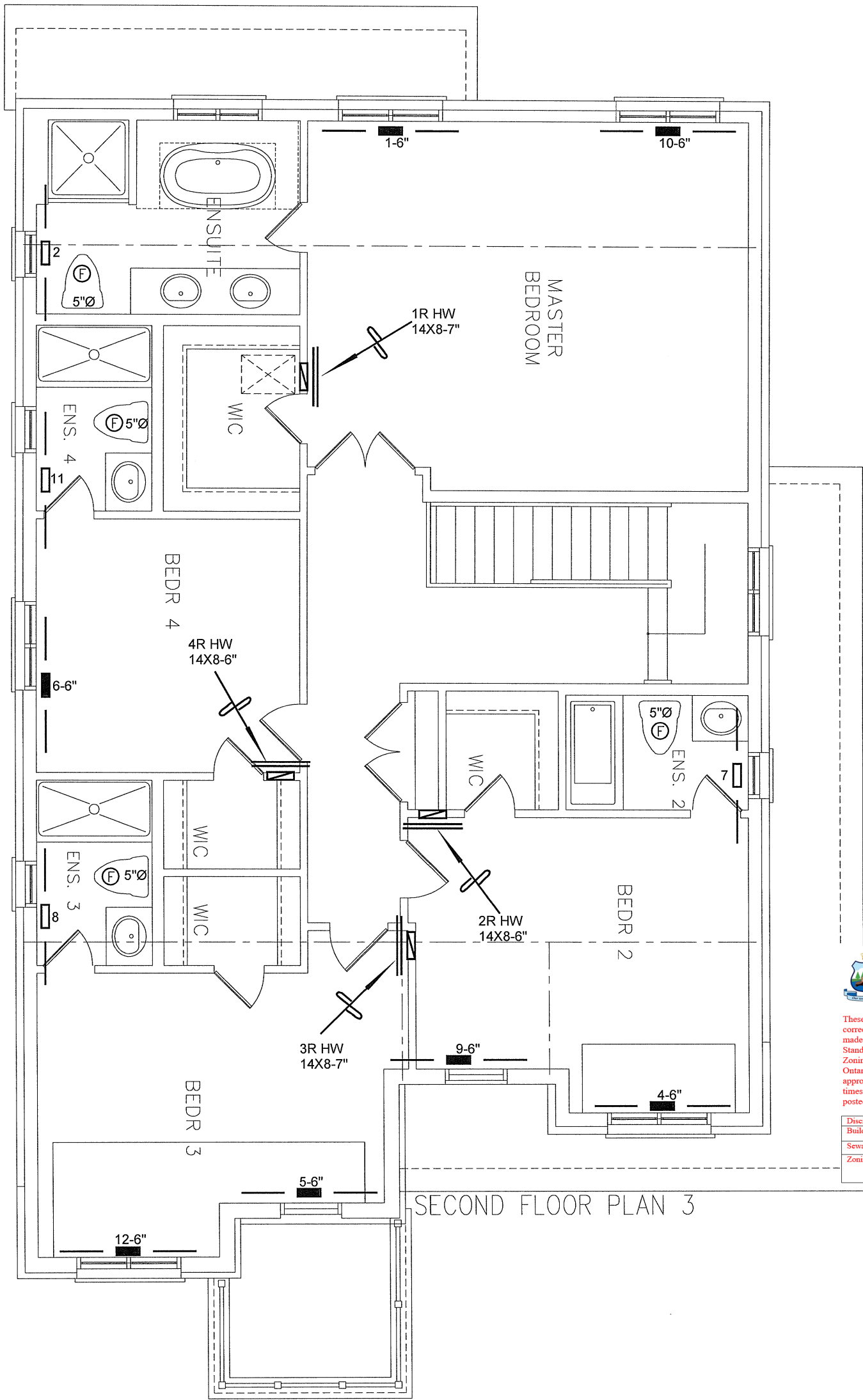
CSA-F280-12

ENERGY STAR

HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS	

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Client		<div></div> <div>375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services</div> <div>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.</div>	Sheet Title	
GREENPARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	DEC/2020
TRINAR HALL HOMES EAST GWILLIMBURY, ONT.			Scale	3/16" = 1'-0"
LOT 31 GLENWAY 3A			BCIN# 19669	
2869 sqft	LO# 88662			



SECOND FLOOR PLAN 3



These plans have been reviewed for use with the corrections as noted. No other changes may be made without written approval of the Building Standards Branch. All work must comply with Zoning By-Law 2018-043, as amended, and the Ontario Building Code, as amended. These approved documents must be kept on site at all times. The building permit must be clearly posted on site at all times.

Discipline	Reviewer	BCIN	Date
Building Code	H. Authier	43236	2021-02-03
Sewage System			
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*  
Michael O'Rourke, BCIN# 19669  
HVAC DESIGNS LTD.

LOT 31

CSA-F280-12

ENERGY STAR

HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS	

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Client GREENPARK HOMES		<div><p>375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services</p><p>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.</p></div>	Sheet Title SECOND FLOOR HEATING LAYOUT	
Project Name TRINAR HALL HOMES EAST GWILLIMBURY, ONT.			Date DEC/2020	
LOT 31 GLENWAY 3A			Scale 3/16" = 1'-0"	
2869 sqft			BCIN# 19669	
			LO#	88662