

SITE NAME: MINNISALE HOMES CORP

BUILDER: GREENPARK HOMES

TYPE: GRANDBROOKE 11

GFA: 2100

DATE: Aug-18
LO# 79579

WINTER NATURAL AIR CHANGE RATE 0.325

HEAT LOSS AT *F. 74

CSA-F280-12

SUMMER NATURAL AIR CHANGE RATE 0.106

HEAT GAIN AT *F. 11

SB-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BATH
204	22	19	35	30				
9	9	9	9	9				
FACTORS	LOSS	GAIN	1836	198	171	315	279	108
GRS.WALL AREA	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN
GLAZING								
NORTH	20.8	15.5	0	0	0	0	0	0
EAST	20.8	41.9	0	0	0	0	0	0
SOUTH	20.8	24.4	32	565	781	0	0	0
WEST	20.8	41.9	20	416	821	12	249	493
SKYLT.	36.4	100.7	0	0	0	0	0	0
DOORS	24.7	3.7	0	0	0	0	0	0
NET EXPOSED WALL	4.4	0.6	1784	7773	1152	186	810	120
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	204	256	114	120	150	67
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS								
SLAB ON GRADE HEAT LOSS								
SUBTOTAL HT LOSS			9109		1210		850	
SUB TOTAL HT GAIN				2868		680		157
LEVEL FACTOR / MULTIPLIER	0.20	0.12						
AIR CHANGE HEAT LOSS			1078		143		101	
AIR CHANGE HEAT GAIN				136		32		7
DUCT LOSS								
DUCT GAIN								
HEAT GAIN PEOPLE	240		2	480		0		0
HEAT GAIN APPLIANCES/LIGHTS				435		0		0
TOTAL HT LOSS BTUH			10187		1353		951	
TOTAL HT GAIN x 1.3 BTUH			5094		925		214	

ROOM USE			LVIDN			KIT			FAM			LAUN			WIR			FOY			MUD									BAS		
EXP. WALL			49			27			40			8			6			8			20									158		
CLG. HT.			10			10			9			9			10			10			14									9		
FACTORS																																
GRS.WALL AREA	LOSS	GAIN																														
GLAZING																																
NORTH	20.8	15.5	0	0	0																											
EAST	20.8	41.9	37	769	1519																											
SOUTH	20.8	24.4	56	1163	1366																											
WEST	20.8	41.9	0	0	0																											
SKYLT.	36.4	100.7	0	0	0																											
DOORS	24.7	3.7	0	0	0																											
NET EXPOSED WALL	4.4	0.6	397	1730	256																											
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0																											
EXPOSED CLG	1.3	0.6	0	0	0																											
NO ATTIC EXPOSED CLG	2.7	1.2	24	64	29																											
EXPOSED FLOOR	2.5	0.4	0	0	0																											
BASEMENT/CRAWL HEAT LOSS																																
SLAB ON GRADE HEAT LOSS																																
SUBTOTAL HT LOSS																																
SUB TOTAL HT GAIN																																
LEVEL FACTOR / MULTIPLIER																																
AIR CHANGE HEAT LOSS																																
AIR CHANGE HEAT GAIN																																
DUCT LOSS																																
DUCT GAIN																																
HEAT GAIN PEOPLE	240																															
HEAT GAIN APPLIANCES/LIGHTS																																
TOTAL HT LOSS BTUH																																
TOTAL HT GAIN x 1.3 BTUH																																

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED
NOV 27 2018
HVAC BY
MONICA CRISAN

20.8	15.5	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	0	0	0	0	0	0	0	0	0	0	0	
------	------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED
NOV 27 2018
HVAC BY
MONICA CRISAN

TOTAL HEAT GAIN BTUH:

29273

TONS: 2.44

LOSS DUE TO VENTILATION LOAD BTUH: 1274

STRUCTURAL HEAT LOSS: 50243

TOTAL COMBINED HEAT LOSS BTUH: 51517

SITE NAME: MINNISALE HOMES CORP
BUILDER: GREENPARK HOMES

TYPE: GRANDBROOKE 11

DATE: Aug-18

GFA: 2100

LO# 79579

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 50,243 TOTAL HEAT GAIN 29,085
AIR FLOW RATE CFM 22.51 AIR FLOW RATE CFM 38.89

furnace pressure 0.6
furnace filter 0.05
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 @ .5" E.S.P.

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	12	7	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.

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

TEMPERATURE RISE 47 °F

RUN #	1	2	3	4	5	6	7	8	10	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-2	BATH	BED-3	MBR	LV/DN	LV/DN	KIT	KIT	FAM	LAUN	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	5.09	1.35	0.95	1.55	1.37	1.55	1.46	1.37	5.09	2.64	2.64	1.31	1.31	1.51	0.87	0.67	1.78	2.30	3.48	3.48	3.48	3.48
CFM PER RUN HEAT	115	30	21	35	31	35	33	31	115	59	59	29	29	34	20	15	40	52	78	78	78	78
RM GAIN MBH	2.55	0.93	0.21	1.49	1.89	1.49	1.36	1.89	2.55	2.44	2.44	0.88	0.88	1.78	1.29	0.47	0.43	0.89	0.36	0.36	0.36	0.36
CFM PER RUN COOLING	99	36	8	58	73	58	53	73	99	95	95	34	34	69	50	18	17	35	14	14	14	14
ADJUSTED PRESSURE	0.15	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.15	0.16	0.16	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	43	37	36	58	60	54	56	65	34	32	48	20	28	27	31	14	24	34	21	20	21	49
EQUIVALENT LENGTH	160	150	150	170	140	170	160	160	160	190	150	190	150	160	190	190	140	150	180	150	200	190
TOTAL EFFECTIVE LENGTH	203	187	186	228	200	224	216	225	194	222	196	210	178	187	221	204	164	184	201	170	221	239
ADJUSTED PRESSURE	0.07	0.09	0.09	0.08	0.09	0.08	0.08	0.08	0.08	0.07	0.08	0.08	0.1	0.09	0.08	0.08	0.1	0.09	0.09	0.1	0.08	0.07
ROUND DUCT SIZE	6	4	4	5	5	5	5	5	6	6	6	4	4	5	5	4	4	4	5	5	5	5
HEATING VELOCITY (ft/min)	586	344	241	257	228	257	242	228	586	301	301	333	333	250	147	172	459	597	573	573	573	573
COOLING VELOCITY (ft/min)	505	413	92	426	536	426	389	536	505	484	484	390	390	507	367	207	195	402	103	103	103	103
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	C	D	D	B	A	B	B	A	C	A	A	D	D	C	B	B	B	D	C	D	B	A

RUN #	26
ROOM NAME	FAM
RM LOSS MBH	1.51
CFM PER RUN HEAT	34
RM GAIN MBH	1.78
CFM PER RUN COOLING	69
ADJUSTED PRESSURE	0.17
ACTUAL DUCT LGH	29
EQUIVALENT LENGTH	150
TOTAL EFFECTIVE LENGTH	179
ADJUSTED PRESSURE	0.1
ROUND DUCT SIZE	5
HEATING VELOCITY (ft/min)	250
COOLING VELOCITY (ft/min)	507
OUTLET GRILL SIZE	3X10
TRUNK	C

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED

NOV 27 2018

HVAC BY
MONICA CRISAN

SUPPLY AIR TRUNK SIZE

TRUNK	STATIC	ROUND	RECT	VELOCITY	TRUNK	STATIC	ROUND	RECT	VELOCITY
CFM	PRESS.	DUCT	DUCT	(ft/min)	CFM	PRESS.	DUCT	DUCT	(ft/min)
TRUNK A	258	0.07	8.7	12	x	8	387		
TRUNK B	514	0.07	11.3	18	x	8	514		
TRUNK C	376	0.07	10.1	12	x	8	564		
TRUNK D	239	0.08	8.2	8	x	8	538		
TRUNK E	615	0.07	12.1	18	x	8	615		
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	STATIC	ROUND	RECT			VELOCITY
	CFM	PRESS.	DUCT	DUCT			(ft/min)
TRUNK O	0	0.05	0	0	x	8	0
TRUNK P	0	0.05	0	0	x	8	0
TRUNK Q	0	0.05	0	0	x	8	0
TRUNK R	0	0.05	0	0	x	8	0
TRUNK S	0	0.05	0	0	x	8	0
TRUNK T	0	0.05	0	0	x	8	0
TRUNK U	0	0.05	0	0	x	8	0
TRUNK V	0	0.05	0	0	x	8	0
TRUNK W	0	0.05	0	0	x	8	0
TRUNK X	1131	0.05	16.5	32	x	8	636
TRUNK Y	330	0.05	10.4	12	x	8	495
TRUNK Z	650	0.05	13.4	20	x	8	585
DROP	1131	0.05	16.5	24	x	10	679

RETURN AIR #	1	2	3	4	5	6																		BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	175	115	115	155	290	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	151
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	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH	32	68	70	44	55	65	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	185	225	255	190	270	185	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	217	293	325	234	325	250	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.07	0.05	0.05	0.06	0.05	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	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	7	7	7.5	9.9	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.5
INLET GRILL SIZE	8	8	8	8	8	8	0	0	0	0	0	0	0	0	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	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	0	0	0	0	0	0	0	0	14

TYPE: GRANDBROOKE 11
 SITE NAME: MINNISALE HOMES CORP

LO # 79579

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	2 @ 10.6 cfm	21.2 cfm
Kitchen & Bathrooms	4 @ 10.6 cfm	42.4 cfm
Other Rooms	5 @ 10.6 cfm	53.0 cfm
Table 9.32.3.A.	TOTAL	159.0 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	63.6 cfm	

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	159	cfm
Less Principal Ventil. Capacity	63.6	cfm
Required Supplemental Capacity	95.4	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
63.6 cfm	3.0 sones
☒	HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
63.6 CFM	74 F	1.08	0.25	

SUPPLEMENTAL FANS		PANASONIC
Location	Model	cfm HVI Sones
ENS	FV-05-11VK1	50 ✓ 0.3
BATH	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 #	
BUILDER:	GREENPARK HOMES
Name:	
Address:	
City:	
Telephone #:	

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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	August-18

CSA F280-12 Residential Heat Loss and Heat Gain Calculations
Formula Sheet (For Air Leakage / Ventilation Calculation)

LO#: 79579

Model: GRANDBROOKE 11

Builder: GREENPARK HOMES

Date: 8/12/2018

Volume Calculation
House Volume

Level	Floor Area (ft ²)	Floor Height (ft)	Volume (ft ³)
Bsmt	981	9	8829
First	981	10	9810
Second	1119	9	10071
Third	0	9	0
Fourth	0	9	0
Total:			28,710.0 ft ³
Total:			813.0 m ³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.325
SUMMER NATURAL AIR CHANGE RATE	0.106

Design Temperature Difference				
	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-19	41	74
Summer DTDc	24	30	6	11

5.2.3.1 Heat Loss due to Air Leakage

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

0.325 x 225.83 x 41 °C x 1.2 = 3627 W

= 12375 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

0.106 x 225.83 x 6 °C x 1.2 = 175 W

= 596 Btu/h

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

64 CFM x 74 °F x 1.08 x 0.25 = 1274 Btu/h

6.2.7 Sensible heat Gain due to Ventilation

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

64 CFM x 11 °F x 1.08 x 0.25 = 189 Btu/h

5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)

$$HL_{airr} = \text{Level Factor} \times HL_{airbv} \times ((HL_{agcr} + HL_{bgcr}) \div (HL_{agcleve} + HL_{bgcleve}))$$

Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{level})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)
1	0.5	12,375	7,737	0.800
2	0.3		8,931	0.416
3	0.2		20,918	0.118
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

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: GRANDBROOKE 11

SFQT: 2100

LO# 79579

BUILDER: GREENPARK HOMES

SITE: MINNISALE HOMES CORP

DESIGN ASSUMPTIONS

HEATING	*F	COOLING	*F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	28710.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 53.0 ft	WIDTH: 26.0 ft	EXPOSED PERIMETER:	158.0 ft

2012 OBC - COMPLIANCE PACKAGE

Component	Compliance Package A1	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20 ci	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	0.28	-
Skylights Maximum U-Value	0.49	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

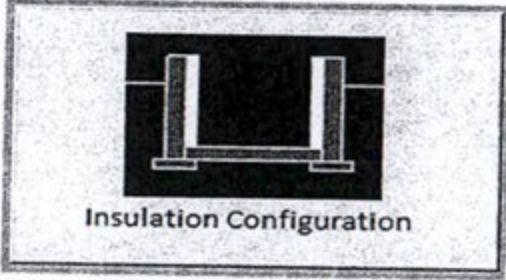
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	16.2	 Insulation Configuration
Floor Width (m):	7.9	
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):	1580	

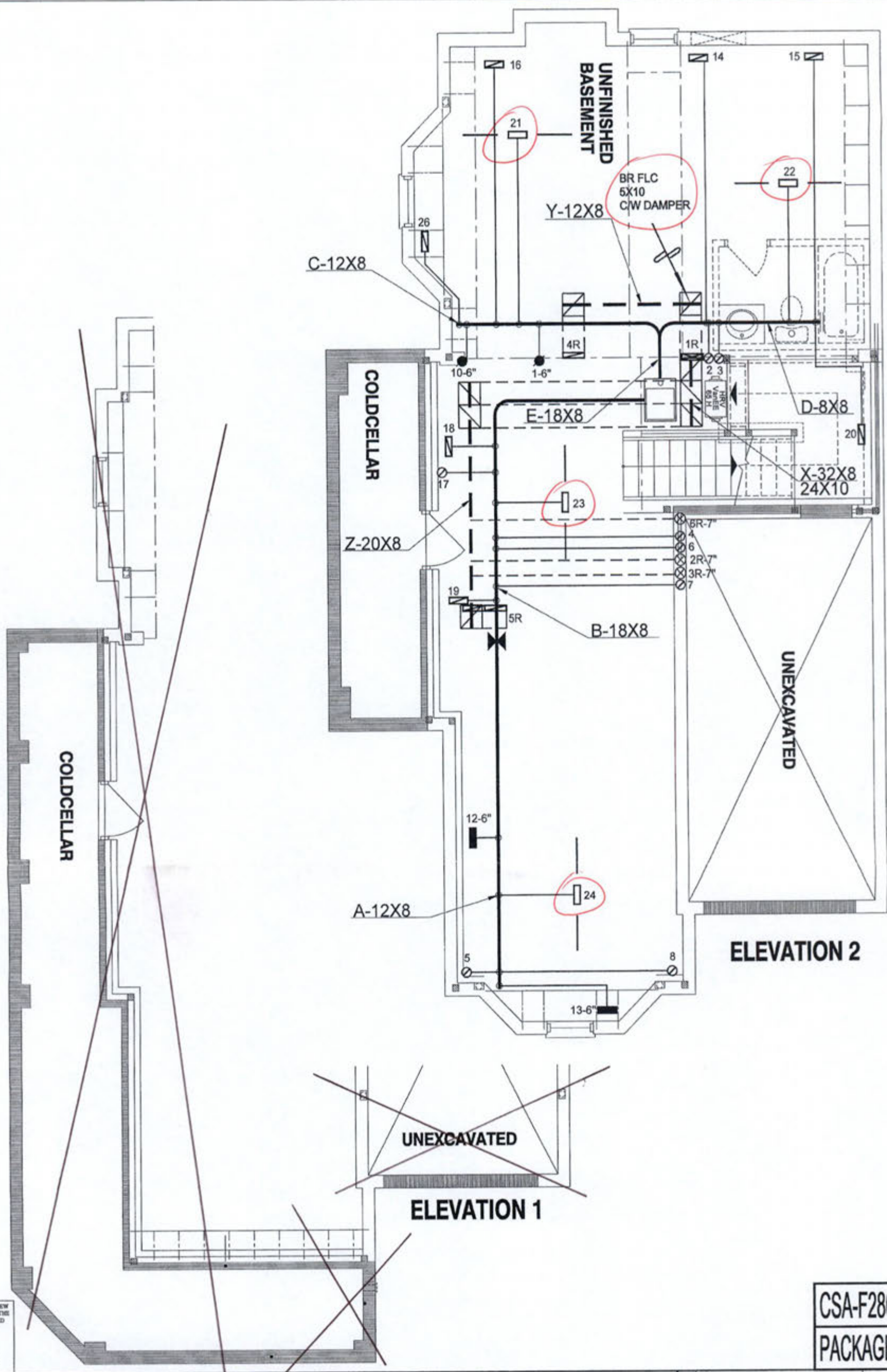
TYPE: GRANDBROOKE 11
LO# 79579

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description			
Province:	Ontario		
Region:	Brampton		
Weather Station Location:	Open flat terrain, grass		
Anemometer height (m):	10		
Local Shielding			
Building Site:	Suburban, forest		
Walls:	Heavy		
Flue:	Heavy		
Highest Ceiling Height (m):	6.71		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	813.0		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1083.7 cm ²	
	3.57	ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust	
	30.0	30.0	
Flue Size			
Flue #:	#1	#2	#3
Diameter (mm):	0	0	0
		#4	0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.325		
Cooling Air Leakage Rate (ACH/H):	0.106		

TYPE: GRANDBROOKE 11
LO# 79579



I MICHAEL O'BROUKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.
Michael O'Brooke
Michael O'Brooke, B.C.M.A. 1969
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

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

3.	
2.	
1.	
No.	Description
	Date
REVISIONS	

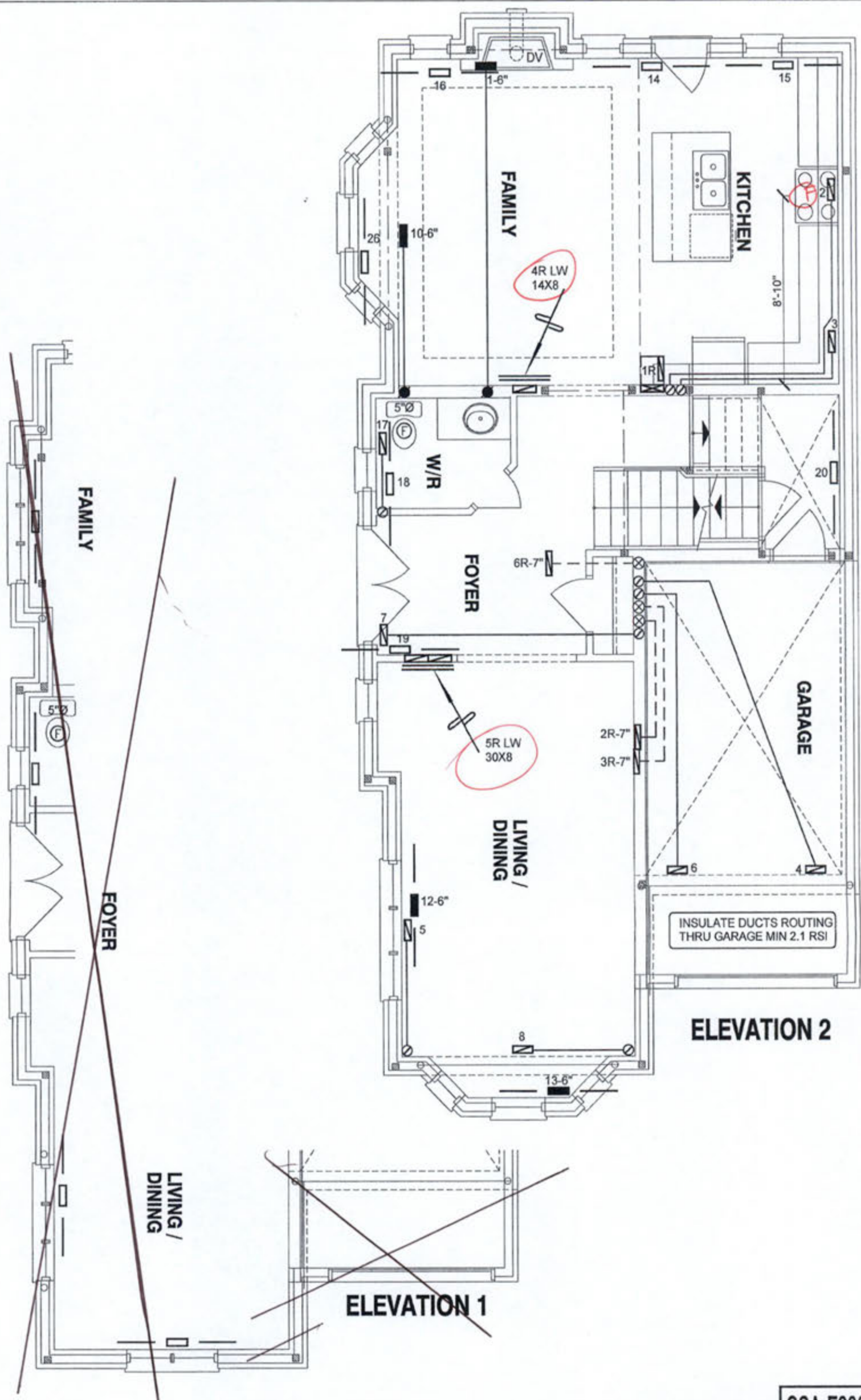
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD. AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS 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
Project Name
**MINNISALE HOMES CORP
BRAMPTON, ONTARIO**
LOT 9 2100
GRANDBROOKE 112100 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdsgns.ca
Web: www.hvacdsgns.ca
Specializing in Residential Mechanical Design Services
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 51517 BTU/H UNIT DATA	# OF RUNS S/A R/A FANS
MAKE GOODMAN	3RD FLOOR
MODEL GMEC960603BNA	2ND FLOOR 12 4 2
INPUT 60 MBTUH	1ST FLOOR 7 2 2
OUTPUT 57.6 MBTUH	BASEMENT 4 1 0
COOLING 2.5 TONS	ALL S/A DIFFUSERS 4"x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5" UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A
FAN SPEED 1131 cfm @ 0.5" w.g.	

Sheet Title
BASEMENT HEATING LAYOUT
Date AUG/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 79579



I MICHAEL OROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.3 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, B.C.E.T. 1969
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

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

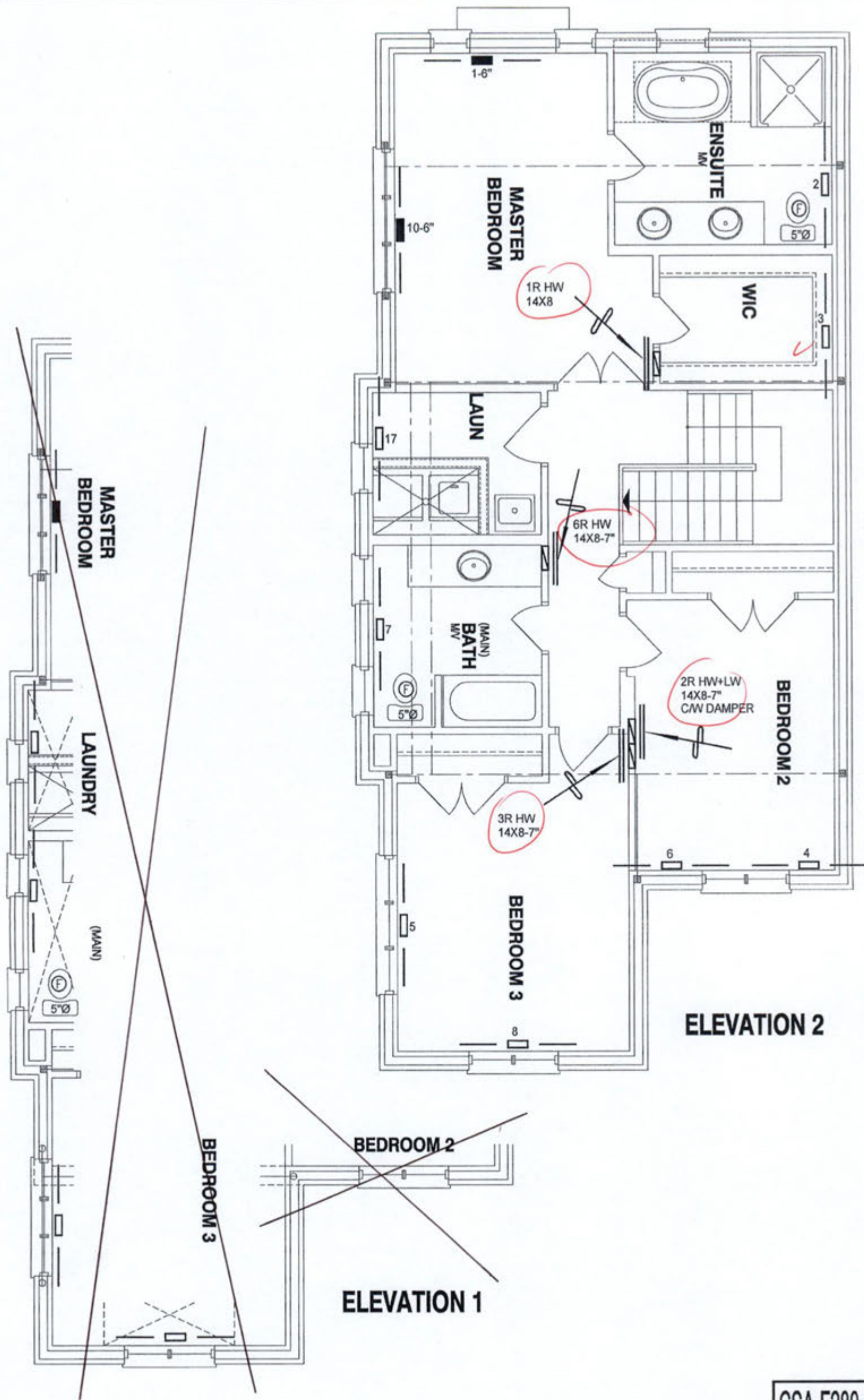
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD. AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS 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
Project Name
MINNISALE HOMES CORP
BRAMPTON, ONTARIO
LOT 9
GRANDBROOKE 112100 sqft

HVACDESIGNS LTD.
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
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.

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED
NOV 27 2018
HVAC BY
MONICA CRISAN

Sheet Title
FIRST FLOOR
HEATING
LAYOUT
Date **AUG/2018**
Scale **3/16" = 1'-0"**
BCIN# **19669**
LO# **79579**



I MICHAEL O'BROCK HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.3 OF THE BUILDING CODE.

Michael O'Brock
Michael O'Brock, BSCM 1969
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

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"x6" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description Date
	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

Project Name
**MINNISALE HOMES CORP
BRAMPTON, ONTARIO**

LOT 9

GRANDBROOKE 112100 sqft

HVAC DESIGNS LTD.

375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdsgns.ca
Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services

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.

**CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED
NOV 27 2018**

**HVAC BY
MONICA CRISAN**

Sheet Title
**SECOND FLOOR
HEATING
LAYOUT**

Date **AUG/2018**

Scale **3/16" = 1'-0"**

BCIN# **19669**

LO# **79579**