

LOT 11R

 SITE NAME: MINNISALE HOMES CORP
 BUILDER: GREENPARK HOMES

TYPE: HEMLOCK 5C

GFA: 2222

 DATE: Aug-18
 L08 79576

 WINTER NATURAL AIR CHANGE RATE 0.348
 SUMMER NATURAL AIR CHANGE RATE 0.110

 HEAT LOSS AT °F. 74
 HEAT GAIN AT °F. 14

 CSA-F240-12
 SB-12 PACKAGE A1

ROOM USE	MBR	ENS	WIC	BED-4	BED-3	BED-2	BATH						
EXP. WALL	13	25	0	13	35	13	0						
CLG. HT.	9	9	9	9	9	9	9						
FACTORS													
GRS.WALL AREA	117	225	0	117	315	117	0						
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN						
NORTH	29.8 16.3 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0						
EAST	29.8 41.5 32 665 1340	14 291 596	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0						
SOUTH	29.8 25.2 0 0 0	7 145 177	0 0 0	0 0 0	38 789 959	20 416 505	0 0 0						
WEST	29.8 41.9 0 0 0	0 0 0	0 0 0	48 997 2011	24 499 1005	0 0 0	0 0 0						
SKYL.T.	36.4 102.1 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0						
DOORS	24.7 4.7 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0						
NET EXPOSED WALL	4.4 0.8 85 379 70	204 889 168	0 0 0	69 301 57	253 1102 205	97 423 80	0 0 0						
NET EXPOSED BMT WALL ABOVE GR	3.5 0.7 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0						
EXPOSED CLG	1.3 0.6 234 293 142	159 199 97	65 81 40	120 150 73	386 358 174	156 195 95	117 147 71						
NO ATTIC EXPOSED CLG	2.7 1.3 0 0 0	0 0 0	0 0 0	62 166 81	0 0 0	0 0 0	0 0 0						
EXPOSED FLOOR	2.5 0.5 0 0 0	0 0 0	0 0 0	182 453 86	36 90 17	0 0 0	65 162 31						
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0						
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0						
SUBTOTAL HT LOSS	1328	1524	81	2068	2838	1034	308						
SUB TOTAL HT GAIN		1553		1027	2307	2363	679					102	
LEVEL FACTOR / MULTIPLIER	0.20 0.28	0.20 0.28	0.20 0.28	0.20 0.28	0.20 0.28	0.20 0.28	0.20 0.28						
AIR CHANGE HEAT LOSS	374	430	23	583	800	291	87						
AIR CHANGE HEAT GAIN		112	74	3	166	171	49					7	
DUCT LOSS	0	0	0	0	265	364	0					40	
DUCT GAIN	0	0	0	0	328	334	0					11	
HEAT GAIN PEOPLE	240	2	480	0	0	1	240					0	
HEAT GAIN APPLIANCES/LIGHTS		564	0	0	564	564	564					0	
TOTAL HT LOSS BTU/H	1703	1954	104	2916	4002	1325	435						
TOTAL HT GAIN x 1.3 BTU/H		3521	1432	85	4686	4773	1992					156	

CITY OF BRAMPTON
 BUILDING DIVISION
 REVIEWED BY: S. HANNA
 JAN 26 2019
 ATTACHED NOTES ARE PART
 OF REVIEWED DRAWINGS
 ALL WORK MUST COMPLY WITH OBC

ROOM USE	LIV	KIT	WR	FOY	MUD								
EXP. WALL	12	37	9	50	16								
CLG. HT.	10	10	10	11	10								
FACTORS													
GRS.WALL AREA	120	370	90	550	160								
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN								
NORTH	29.8 16.3 0 0 0	26 640 424	0 0 0	0 0 0	0 0 0								
EAST	29.8 41.9 35 727 1466	40 831 1676	0 0 0	0 0 0	0 0 0								
SOUTH	29.8 25.2 0 0 0	20 416 505	0 0 0	20 416 505	0 0 0								
WEST	29.8 41.9 0 0 0	0 0 0	0 0 0	6 125 251	0 0 0								
SKYL.T.	36.4 102.1 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0								
DOORS	24.7 4.7 0 0 0	0 0 0	0 0 0	40 595 186	20 493 93								
NET EXPOSED WALL	4.4 0.8 85 379 70	284 1237 223	90 392 74	484 2109 398	140 610 115								
NET EXPOSED BMT WALL ABOVE GR	3.5 0.7 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0								
EXPOSED CLG	1.3 0.6 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0								
NO ATTIC EXPOSED CLG	2.7 1.3 0 0 0	39 105 51	0 0 0	20 54 26	0 0 0								
EXPOSED FLOOR	2.5 0.5 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0								
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0								
SLAB ON GRADE HEAT LOSS	0	0	0	0	0								
SUBTOTAL HT LOSS	1098	3129	392	3689	1103								
SUB TOTAL HT GAIN		1536		74	1366								
LEVEL FACTOR / MULTIPLIER	0.30 0.41	0.30 0.41	0.30 0.41	0.30 0.41	0.30 0.41								
AIR CHANGE HEAT LOSS	453	1291	162	1522	455								
AIR CHANGE HEAT GAIN		111		5	99								
DUCT LOSS	0	0	0	0	0								
DUCT GAIN	0	0	0	0	0								
HEAT GAIN PEOPLE	240	0	0	0	0								
HEAT GAIN APPLIANCES/LIGHTS		564	0	0	564								
TOTAL HT LOSS BTU/H	1550	4420	564	5211	1558								
TOTAL HT GAIN x 1.3 BTU/H		2874		1904	1623								

TOTAL HEAT GAIN BTU/H:

29253

TONS: 2.44

LOSS DUE TO VENTILATION LOAD BTU/H: 1593

STRUCTURAL HEAT LOSS: 39251

TOTAL COMBINED HEAT LOSS BTU/H: 39843

18-411388 600 80 RD

SITE NAME: MINNISALE HOMES CORP
BUILDER: GREENPARK HOMES

TYPE: HEMLOCK 5C

DATE: Aug-18

GFA: 2222 LO# 79576

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 38,251 TOTAL HEAT GAIN 28,952
AIR FLOW RATE CFM 29.57 AIR FLOW RATE CFM 39.06

furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure
for s/a & r/a 0.35

#GOODMAN
GMCC960603BNA 60
FAN SPEED
LOW
MEDLOW
MEDIUM
MEDIUM HIGH
HIGH 1131

AFUE = 96 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = 57,600
DESIGN CFM = 1131
CFM @ 6" E.S.P.

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	10	8	4
R/A	0	0	4	1	1

All S/A diffusers 4"x10" unless noted otherwise on layout.

All S/A runs 5"Ø unless noted otherwise on layout.

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

TEMPERATURE RISE 47 °F

RUN #	1	2	3	4	5	6	7	8	9	10	12	13	14	15	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-4	BED-3	BED-2	BATH	BED-4	BED-3	MBR	LIV	LIV	KIT	KIT	FOY	WIR	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	0.85	1.95	0.10	1.46	2.00	1.32	0.43	1.46	2.00	0.85	0.78	0.78	2.21	2.21	2.61	0.55	2.61	1.56	3.13	3.13	3.13	3.13
CFM PER RUN HEAT	25	58	3	43	59	39	13	43	59	25	23	23	65	65	77	16	77	46	93	93	93	93
RM GAIN MBH	1.76	1.43	0.06	2.34	2.39	1.99	0.16	2.34	2.39	1.76	1.44	1.44	2.38	2.38	0.95	0.10	0.95	1.02	0.42	0.42	0.42	0.42
CFM PER RUN COOLING	69	56	2	92	93	78	6	92	93	69	56	56	93	93	37	4	37	40	16	16	16	16
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	40	50	33	51	51	36	37	57	54	42	42	47	40	29	32	20	47	17	37	25	10	32
EQUIVALENT LENGTH	150	200	160	180	170	160	150	210	170	190	170	190	170	140	150	160	160	140	190	160	160	190
TOTAL EFFECTIVE LENGTH	190	250	193	231	221	196	187	267	224	232	212	237	210	189	182	180	207	157	227	185	170	222
ADJUSTED PRESSURE	0.09	0.07	0.09	0.07	0.07	0.09	0.09	0.06	0.07	0.07	0.08	0.07	0.08	0.1	0.09	0.1	0.08	0.11	0.07	0.09	0.1	0.07
ROUND DUCT SIZE	5	5	4	6	6	5	4	6	6	5	5	5	6	6	5	4	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	184	426	34	219	301	286	149	219	301	184	169	169	331	331	565	184	565	528	474	474	474	474
COOLING VELOCITY (ft/min)	507	411	23	469	474	573	69	469	474	507	411	411	474	474	272	46	272	459	82	82	82	82
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	C	B	A	A	D	B	A	A	C	C	C	C	C	A	D	B	B	C	D	D	A

RUN #	1	2	3	4	5	6	7	8	9	10	12	13	14	15	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-4	BED-3	BED-2	BATH	BED-4	BED-3	MBR	LIV	LIV	KIT	KIT	FOY	WIR	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	0.85	1.95	0.10	1.46	2.00	1.32	0.43	1.46	2.00	0.85	0.78	0.78	2.21	2.21	2.61	0.55	2.61	1.56	3.13	3.13	3.13	3.13
CFM PER RUN HEAT	25	58	3	43	59	39	13	43	59	25	23	23	65	65	77	16	77	46	93	93	93	93
RM GAIN MBH	1.76	1.43	0.06	2.34	2.39	1.99	0.16	2.34	2.39	1.76	1.44	1.44	2.38	2.38	0.95	0.10	0.95	1.02	0.42	0.42	0.42	0.42
CFM PER RUN COOLING	69	56	2	92	93	78	6	92	93	69	56	56	93	93	37	4	37	40	16	16	16	16
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	40	50	33	51	51	36	37	57	54	42	42	47	40	29	32	20	47	17	37	25	10	32
EQUIVALENT LENGTH	150	200	160	180	170	160	150	210	170	190	170	190	170	140	150	160	160	140	190	160	160	190
TOTAL EFFECTIVE LENGTH	190	250	193	231	221	196	187	267	224	232	212	237	210	189	182	180	207	157	227	185	170	222
ADJUSTED PRESSURE	0.09	0.07	0.09	0.07	0.07	0.09	0.09	0.06	0.07	0.07	0.08	0.07	0.08	0.1	0.09	0.1	0.08	0.11	0.07	0.09	0.1	0.07
ROUND DUCT SIZE	5	5	4	6	6	5	4	6	6	5	5	5	6	6	5	4	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	184	426	34	219	301	286	149	219	301	184	169	169	331	331	565	184	565	528	474	474	474	474
COOLING VELOCITY (ft/min)	507	411	23	469	474	573	69	469	474	507	411	411	474	474	272	46	272	459	82	82	82	82
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	C	B	A	A	D	B	A	A	C	C	C	C	C	A	D	B	B	C	D	D	A

CITY OF BRAMPTON
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JAN 26 2019

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SUPPLY AIR TRUNK SIZE															RETURN AIR TRUNK SIZE															
	TRUNK	STATIC	ROUND	RECT	VELOCITY						TRUNK	STATIC	ROUND	RECT	VELOCITY						TRUNK	STATIC	ROUND	RECT	VELOCITY					
	CFM	PRESS.	DUCT	DUCT				(ft/min)		CFM	PRESS.	DUCT	DUCT				(ft/min)		CFM	PRESS.	DUCT	DUCT				(ft/min)				(ft/min)
	TRUNK A	374	0.06	10.4	12	x	8	561		TRUNK G	0	0.00	0	0	x	8	0		TRUNK O	0	0.06	0	0	x	8	0				
	TRUNK B	513	0.06	11.7	16	x	8	577		TRUNK H	0	0.00	0	0	x	8	0		TRUNK P	0	0.06	0	0	x	8	0				
	TRUNK C	377	0.07	10.1	14	x	8	485		TRUNK I	0	0.00	0	0	x	8	0		TRUNK Q	0	0.06	0	0	x	8	0				
	TRUNK D	618	0.07	12.1	18	x	8	618		TRUNK J	0	0.00	0	0	x	8	0		TRUNK R	0	0.06	0	0	x	8	0				
	TRUNK E	1131	0.06	15.8	28	x	8	727		TRUNK K	0	0.00	0	0	x	8	0		TRUNK S	0	0.06	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	0.06	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				
RETURN AIR #	1	2	3	4			6										BR		TRUNK X	1131	0.06	15.8	30	x	8	679				
AIR VOLUME	185	155	115	125	0		395	0	0	0	0	0	0	0	0	0	156		TRUNK Y	735	0.06	13.4	20	x	8	662				
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		TRUNK Z	0	0.06	0	0	x	8	0				
ACTUAL DUCT LGH.	40	49	52	54	1		26	1	1	1	1	1	1	1	1	1	14		DROP	1131	0.06	15.8	24	x	10	679				
EQUIVALENT LENGTH	145	185	195	155	0		225	0	0	0	0	0	0	0	0	0	135													
TOTAL EFFECTIVE LH	185	234	247	209	1		251	1	1	1	1	1	1	1	1	1	149													
ADJUSTED PRESSURE	0.08	0.06	0.06	0.07	14.80		0.06	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	7.5	6.7	6.7	0		10.6	0	0	0	0	0	0	0	0	0	6.6													
INLET GRILL SIZE	8	8	8	8	0		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	0		30	0	0	0	0	0	0	0	0	0	14													

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	12	13	14	15	17	18	19	20	21	22	23	24
AIR VOLUME	185	155	115	125	0	395	0	0	0	0	0	0	0	0	156							
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							
ACTUAL DUCT LGH	40	49	52	54	1	26	1	1	1	1	1	1	1	1	1							
EQUIVALENT LENGTH	145	185	195	155	0	225	0	0	0	0	0	0	0	0	0							
TOTAL EFFECTIVE LH	185	234	247	209	1	251	1	1	1	1	1	1	1	1	1							
ADJUSTED PRESSURE	0.08	0.06	0.06	0.07	14.80	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80							
ROUND DUCT SIZE	7.5	7.5	6.7	6.7	0	10.6	0	0	0	0	0	0	0	0	0							
INLET GRILL SIZE	8	8	8	8	0	8	0	0	0	0	0	0	0	0	0							
INLET GRILL SIZE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X							
INLET GRILL SIZE	14	14	14	14	0	30	0	0	0	0	0	0	0	0	0							

TYPE: HEMLOCK 5C
SITE NAME: MINNISALE HOMES CORP

LO # 79576

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/in 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	4	@ 10.6 cfm	42.4	cfm
Other Rooms	5	@ 10.6 cfm	53.0	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 74 F	X 1.08	X 0.25

SUPPLEMENTAL FANS PANASONIC

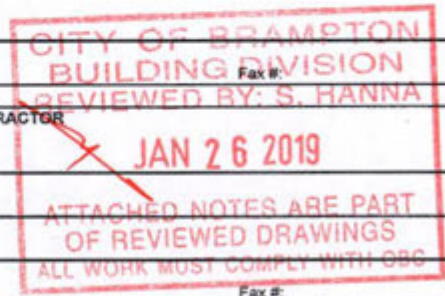
Location	Model	cfm	HVI	Sones
ENS	FV-05-11VK1	50	✓	0.3
BATH	FV-05-11VK1	50	✓	0.3
WR	FV-05-11VK1	50	✓	0.3

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 #:

INSTALLING CONTRACTOR
Name:
Address:
City:
Telephone #:

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: August-18


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

LO#: 79576

Model: HEMLOCK 5C

Builder: GREENPARK HOMES

Date: 8/10/2018

Volume Calculation
Air Change & Delta T Data
House Volume

Level	Floor Area (ft ²)	Floor Height (ft)	Volume (ft ³)
Bsmt	947	9	8523
First	947	10	9470
Second	1114	9	10026
Third	0	9	0
Fourth	0	9	0
Total:			28,019.0 ft ³
Total:			793.4 m ³

WINTER NATURAL AIR CHANGE RATE	0.348
SUMMER NATURAL AIR CHANGE RATE	0.110

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-19	41	74
Summer DTDc	22	30	8	14

5.2.3.1 Heat Loss due to Air Leakage
6.2.6 Sensible Gain due to Air Leakage

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

$$0.348 \times 220.39 \times 41^\circ\text{C} \times 1.2 = 3793 \text{ W}$$

$$= 12942 \text{ Btu/h}$$

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

$$0.110 \times 220.39 \times 8^\circ\text{C} \times 1.2 = 225 \text{ W}$$

$$= 769 \text{ Btu/h}$$

5.2.3.2 Heat Loss due to Mechanical Ventilation
6.2.7 Sensible heat Gain due to Ventilation

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

$$80 \text{ CFM} \times 74^\circ\text{F} \times 1.08 \times 0.25 = 1593 \text{ Btu/h}$$

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

$$80 \text{ CFM} \times 14^\circ\text{F} \times 1.08 \times 0.25 = 301 \text{ Btu/h}$$

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

$$HL_{airr} = \text{Level Factor} \times HL_{airbv} \times \{ (HL_{agcr} + HL_{bgcr}) \div (HL_{agcleve1} + HL_{bgcleve1}) \}$$

Level	Level Factor (LF)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{level})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HL _{level})
1	0.5	12,942	6,048	1.070
2	0.3		9,410	0.413
3	0.2		9,182	0.282
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 HLairbv = 0

**CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. HANNA**

JAN 26 2019

ATTACHED NOTES ARE PART
OF REVIEWED DRAWINGS
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HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** HEMLOCK 5C**BUILDER:** GREENPARK HOMES**SFQT:** 2222**LO#** 79576**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)	72

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	WEST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	UNSHelterED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	28019.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 49.0 ft	WIDTH: 29.0 ft	EXPOSED PERIMETER:	119.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component**

Ceiling with Attic Space Minimum RSI (R)-Value
Ceiling Without Attic Space Minimum RSI (R)-Value
Exposed Floor Minimum RSI (R)-Value
Walls Above Grade Minimum RSI (R)-Value
Basement Walls Minimum RSI (R)-Value
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
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value
Windows and Sliding Glass Doors Maximum U-Value
Skylights Maximum U-Value
Space Heating Equipment Minimum AFUE
HRV Minimum Efficiency
Domestic Hot Water Heater Minimum EF

CITY OF BRAMPTON
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A1**

Nominal	Min. Eff.
60	59.22
31	27.65
31	29.80
22	17.03
20 ci	21.12
-	-
10	10
10	11.13
0.28	-
0.49	-
0.96	-
75%	-
0.8	-

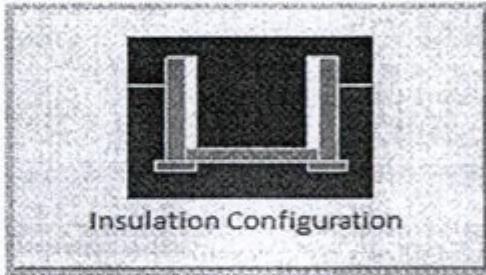
INDIVIDUAL BCIN: 19669

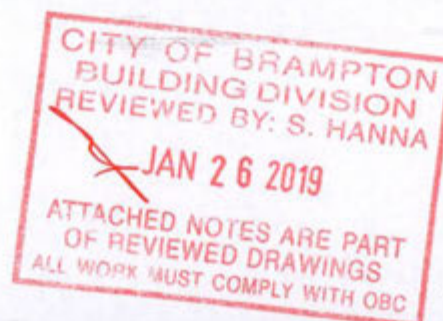
MICHAEL O'ROURKE

Michael O'Rourke

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

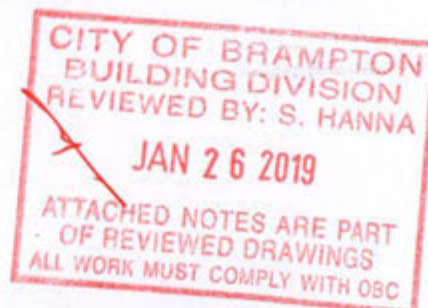
Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	14.9	 Insulation Configuration
Floor Width (m):	8.8	
Exposed Perimeter (m):	36.3	
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):	1193 ✓	

TYPE: HEMLOCK 5C
LO# 79576

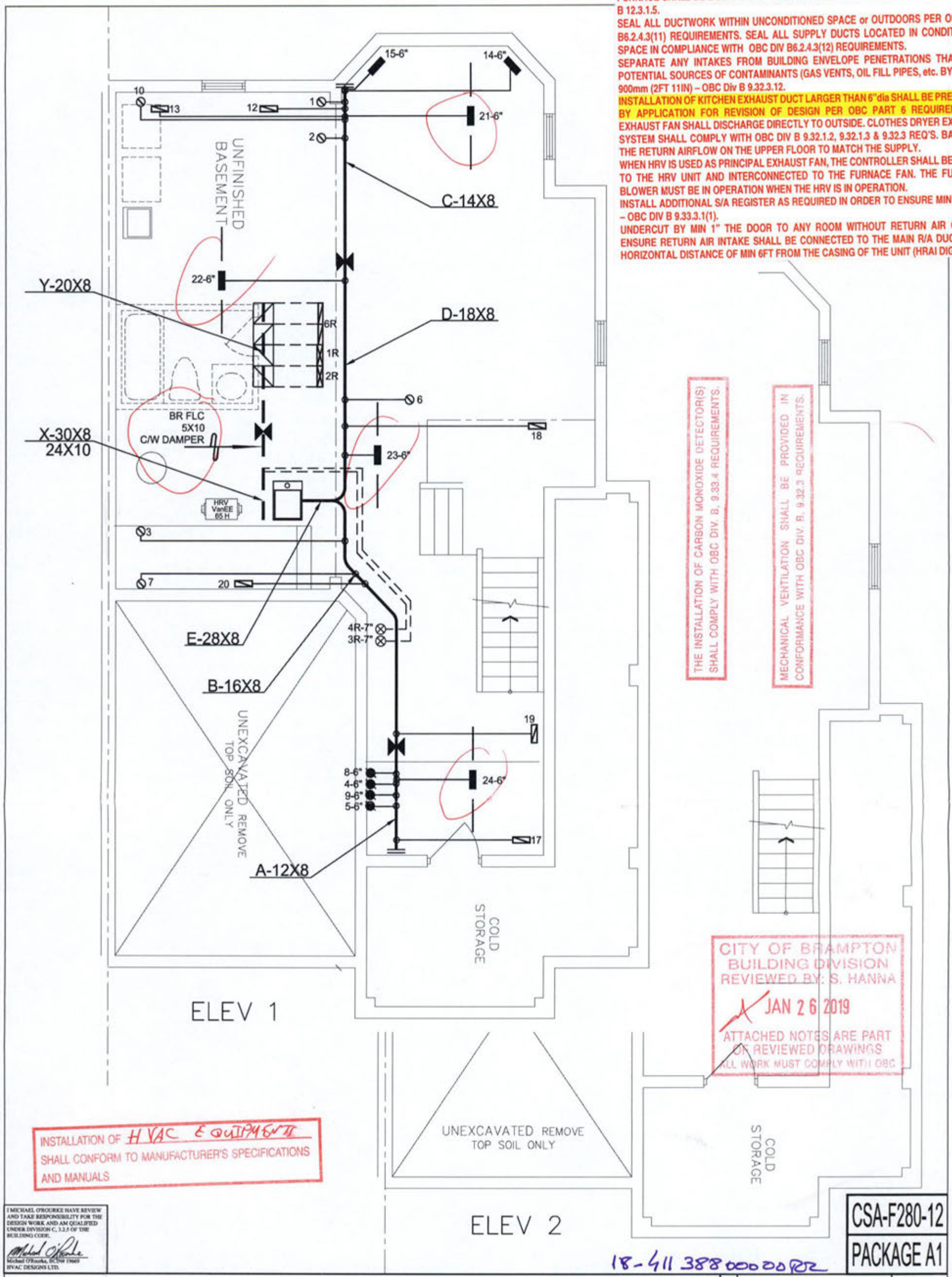
Air Infiltration Residential Load Calculator

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:	Very heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	7.62			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	793.4			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1057.6 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	37.5	37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.348			
Cooling Air Leakage Rate (ACH/H):	0.110			

TYPE: HEMLOCK 5C
LO# 79576

ENSURE THAT MIN THERMAL PERFORMANCE OF BLDG ENVELOPE AND EQUIPMENT SHALL CONFORM TO OBC SB-12, 3.1.1.2 TABLES REQUIREMENTS. FURNACE SHALL BE EQUIPPED WITH BRUSHLESS DIRECT CURRENT MOTOR OBC DIV B 12.3.1.5. SEAL ALL DUCTWORK WITHIN UNCONDITIONED SPACE or OUTDOORS PER OBC DIV B6.2.4.3(11) REQUIREMENTS. SEAL ALL SUPPLY DUCTS LOCATED IN CONDITIONED SPACE IN COMPLIANCE WITH OBC DIV B6.2.4.3(12) REQUIREMENTS. SEPARATE ANY INTAKES FROM BUILDING ENVELOPE PENETRATIONS THAT ARE POTENTIAL SOURCES OF CONTAMINANTS (GAS VENTS, OIL FILL PIPES, etc. BY MIN 900mm (2FT 11IN) - OBC Div B 9.32.3.12. INSTALLATION OF KITCHEN EXHAUST DUCT LARGER THAN 6"dia SHALL BE PRECEDED BY APPLICATION FOR REVISION OF DESIGN PER OBC PART 6 REQUIREMENTS. EXHAUST FAN SHALL DISCHARGE DIRECTLY TO OUTSIDE. CLOTHES DRYER EXHAUST SYSTEM SHALL COMPLY WITH OBC DIV B 9.32.1.2, 9.32.1.3 & 9.32.3 REQ'S. BALANCE THE RETURN AIRFLOW ON THE UPPER FLOOR TO MATCH THE SUPPLY. WHEN HRV IS USED AS PRINCIPAL EXHAUST FAN, THE CONTROLLER SHALL BE WIRED TO THE HRV UNIT AND INTERCONNECTED TO THE FURNACE FAN. THE FURNACE BLOWER MUST BE IN OPERATION WHEN THE HRV IS IN OPERATION. INSTALL ADDITIONAL S/A REGISTER AS REQUIRED IN ORDER TO ENSURE MIN 72degF - OBC DIV B 9.33.3.1(1). UNDERCUT BY MIN 1" THE DOOR TO ANY ROOM WITHOUT RETURN AIR GRILLE. ENSURE RETURN AIR INTAKE SHALL BE CONNECTED TO THE MAIN R/A DUCT AT A HORIZONTAL DISTANCE OF MIN 6FT FROM THE CASING OF THE UNIT (HRAI DIGEST).



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

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

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Client

GREENPARK HOMES

Project Name

MINNISALE HOMES CORP
BRAMPTON, ONTARIO

LOT 11R

HEMLOCK 5C **2222 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.

HEAT LOSS 39843 BTU/H
UNIT DATA

MAKE **GOODMAN**

MODEL **GMEC960603BNA**

INPUT 60 MBTUH

OUTPUT 57.6 MBTUH

COOLING 2.5 TONS

FAN SPEED 1131 cfm @ 0.6" w.c.

OF RUNS S/A R/A FANS

3RD FLOOR			
2ND FLOOR	10	4	2
1ST FLOOR	8	1	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

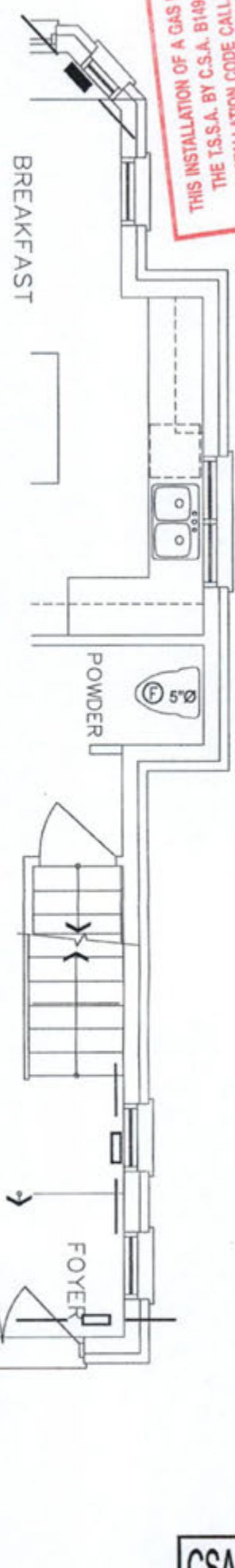
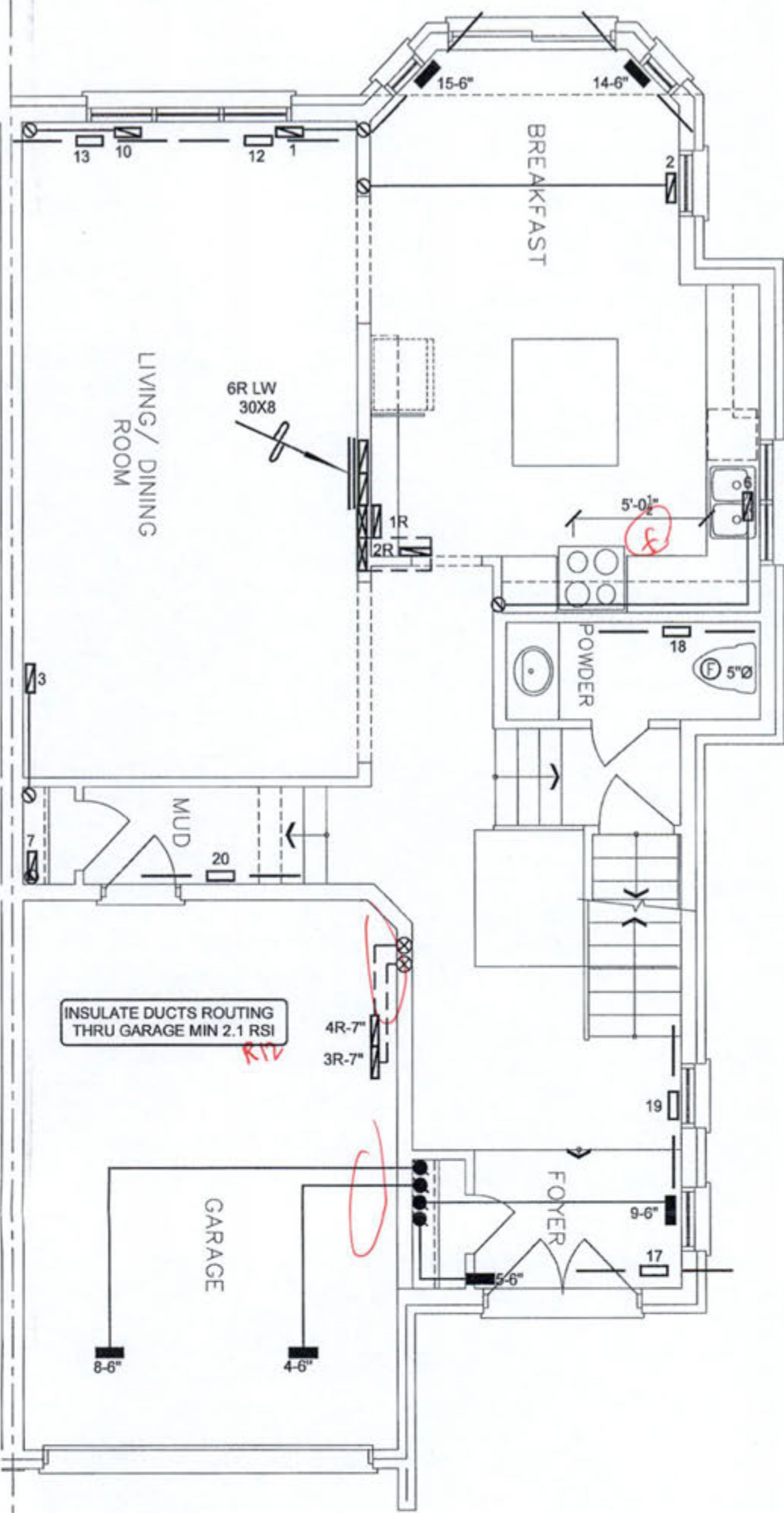
BASEMENT HEATING LAYOUT

Date **AUG/2018**

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

BCIN# **19669**

LO# **79576**



THIS INSTALLATION OF A GAS FIREPLACE IS REGULATED UNDER THE T.S.S.A. BY C.S.A. B149.1 NATURAL GAS AND PROPANE INSTALLATION CODE CALL ENBRIDGE FOR INSPECTION AT 1-800-785-1314

CITY OF BRAMPTON
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JAN 26 2019
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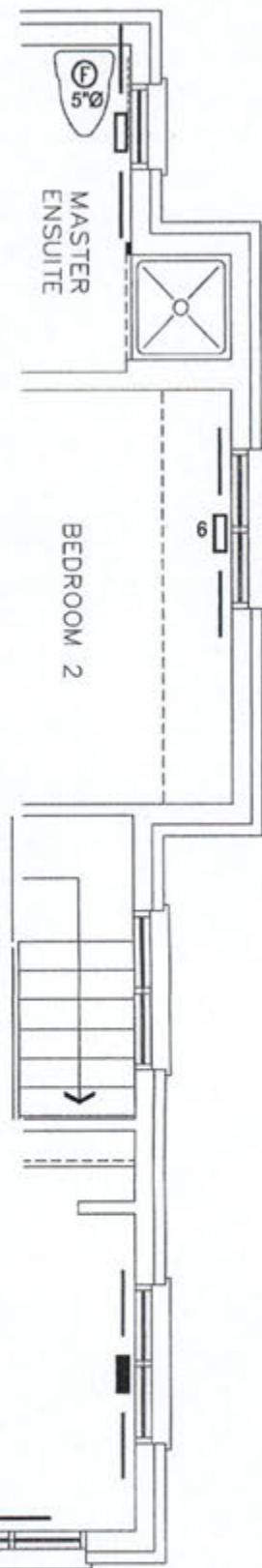
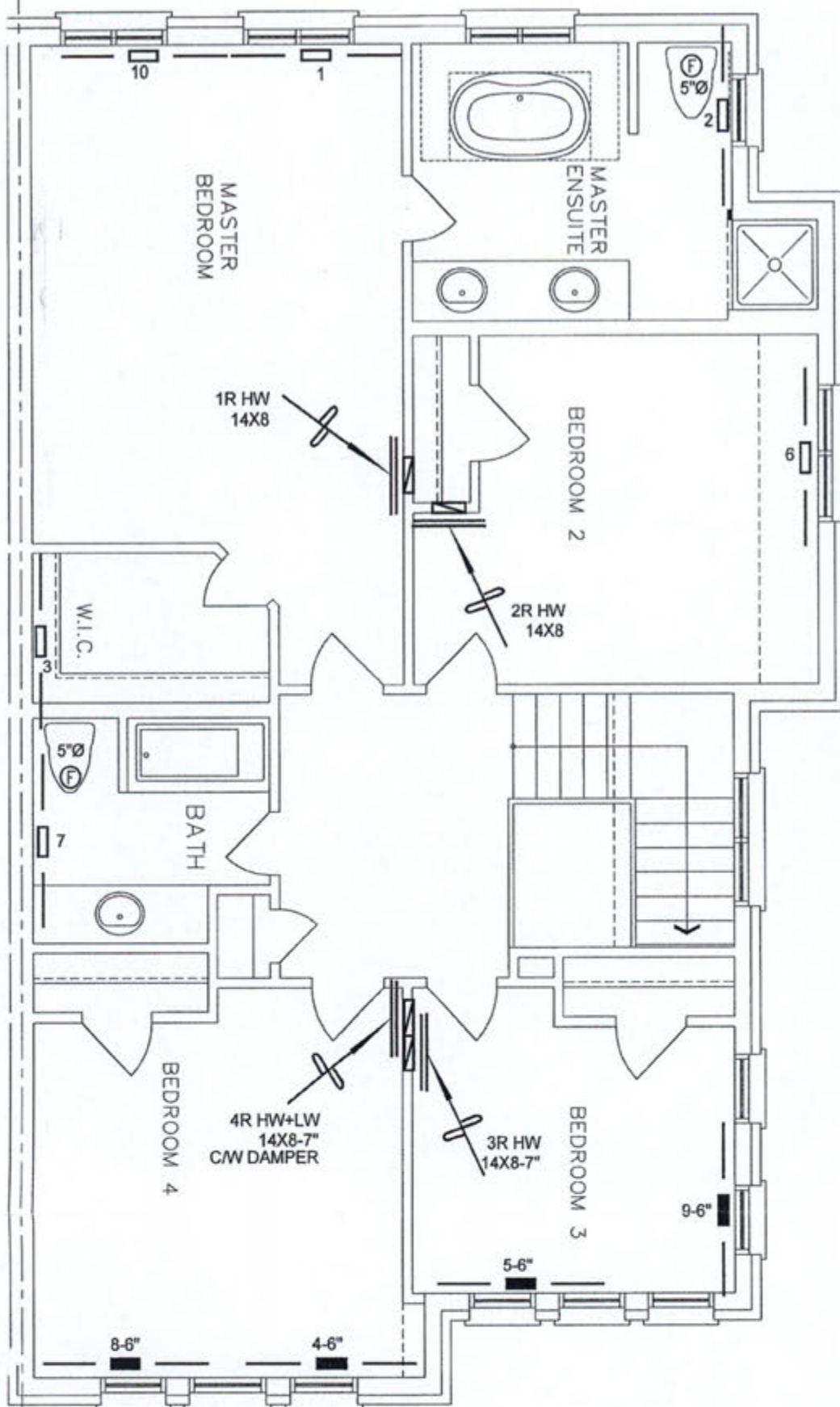
I MICHAEL O'BRIEN HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.
Michael O'Brien, BC209 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

HVAC LEGEND						REVISIONS	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Date
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE	3.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x6" RETURN AIR GRILLE	2.	
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	1.	
					REDUCER		

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Client		 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.	Sheet Title	
GREENPARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	AUG/2018
MINNISALE HOMES CORP BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
			BCIN# 19669	
HEMLOCK 5C 2222 sqft		LO#	79576	



ELEV 2

ELEV 2

CITY OF BRAMPTON
BUILDING DIVISION
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I MICHAEL O'BRIEN HAVE REVIEWED
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C, 3.3.3 OF THE
BUILDING CODE.
Michael O'Brien
MICHAEL O'BRIEN
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

HVAC LEGEND						REVISIONS	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Date
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	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		RETURN AIR STACK 2nd FLOOR	3.	
					REDUCER		

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ONTARIO BUILDING CODE.

Client GREENPARK HOMES		 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.	Sheet Title SECOND FLOOR HEATING LAYOUT	
Project Name MINNISALE HOMES CORP BRAMPTON, ONTARIO			Date AUG/2018	
HEMLOCK 5C 2222 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO#	79576