

SITE NAME: MINNISALE HOMES CORP
BUILDER: GREENPARK HOMES

TYPE: HEMLOCK 4

GFA: 1960

DATE: Aug-18
LO# 79574WINTER NATURAL AIR CHANGE RATE 0.367
SUMMER NATURAL AIR CHANGE RATE 0.115HEAT LOSS ΔT °F. 74
HEAT GAIN ΔT °F. 11CSA-F280-12
SB-12 PACKAGE A1

ROOM USE			MBR		ENS		WIC		BED-2		BED-3		BED-4		BATH		SUMMER NATURAL AIR CHANGE RATE 0.115		HEAT GAIN ΔT °F. 11		SB-12 PACKAGE				
EXP. WALL			29		20		5		29		32		16		8										
CLG. HT.			9		9		9		9		9		9		9										
FACTORS																									
GRS.WALL AREA			251		180		45		251		288		144		72										
GLAZING			LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN										
NORTH			20.8	15.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
EAST			20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
SOUTH			20.8	24.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
WEST			20.8	41.0	18	374	739	14	291	575	0	0	0	0	0	0	0	0							
SKYLT.			36.4	100.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
DOORS			24.7	3.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
NET EXPOSED WALL			4.4	0.6	243	1069	157	166	723	107	45	196	29	243	1069	157	267	1163	172	124	540	80	65	283	42
NET EXPOSED BSMT WALL ABOVE GR			3.5	0.5	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	208	261	116	100	125	66	50	63	28	220	276	123	124	155	69	110	138	61	104	130	58
NO ATTIC EXPOSED CLG			2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR			2.5	0.4	0	0	0	0	0	0	0	0	0	136	339	50	0	0	0	0	0	0	0	0	0
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					1693			1139			259		2047			1884			1094			559			
SUB TOTAL HT GAIN						1012		738			57		1069			1161			796			271			
LEVEL FACTOR / MULTIPLIER			0.20	0.29				0.20	0.29				0.20	0.29					0.20	0.29					
AIR CHANGE HEAT LOSS					487			328			74		589			542			314			161			
AIR CHANGE HEAT GAIN						66		48			4		70			76			52			18			
DUCT LOSS					0			0			0		264			0			0			0			
DUCT GAIN						0		0			0		179			0			0			0			
HEAT GAIN PEOPLE			240		2	480	0	0	0	0	0	1	240	1	240	1	240	0	0	0	0	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS						411	0	0	0	0	0	0	411		411		411		411		411		0	0	
TOTAL HT LOSS BTU/H					2180			1467			333		2899			2425			1408			720			
TOTAL HT GAIN x 1.3 BTU/H						2560		1022			79		2560			2455			1949			375			

ATTACHED NOTES ARE PART
OF REVIEWED DRAWINGS
ALL WORK MUST COMPLY WITH O.C.

MAR 27 2019

CITY OF HAMPTON
REVIEWED BY: S. DESAIN



ROOM USE	EXP. WALL	CLG. HT.	LIV	DIN	KT/FM	LAUN	WIR	FOY	MUD															
			39	21	47	7	8	11	8															
			10	10	10	9	10	11	11															
FACTORS																								
GRS.WALL AREA	LOSS	GAIN	371	200	447	63	50	121	88															
GLAZING	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN														
NORTH	20.8	15.5	0	0	0	0	0	0	0	0														
EAST	20.8	41.0	34	706	1396	0	0	0	0	0														
SOUTH	20.8	24.4	0	0	0	23	478	661	0	0														
WEST	20.8	41.0	0	0	0	0	0	0	81	1683	3325	0	0	0	10	208	244	0	0	0	0	0	0	0
SKYLT.	36.4	100.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	24.7	3.7	0	0	0	0	0	0	18	444	66	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.4	0.6	337	1466	217	177	769	114	348	1514	224	54	235	35	50	218	32	88	383	57	68	296	44	
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	48	60	27	91	114	51	20	25	11	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	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	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
SUBTOTAL HT LOSS			2173			1247			3701			536			243			1147			789			
SUB TOTAL HT GAIN				1613		675			3642			305			43			497			117			
LEVEL FACTOR / MULTIPLIER	0.30	0.43				0.30	0.43		0.30	0.43		0.20	0.29		0.30	0.43		0.30	0.43		0.30	0.43		
AIR CHANGE HEAT LOSS			928			533			1581			154			104			490			337			
AIR CHANGE HEAT GAIN				106		44			239			20			3			33			8			
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	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS				411		411			411			411			0			0			411			
TOTAL HT LOSS BTU/H			3101			1780			5282			690			347			1636			1126			
TOTAL HT GAIN x 1.3 BTU/H				2769		1470			5580			958			60			689			697			

TOTAL HEAT GAIN BTU/H:

24812

TONS: 2.07

LOSS DUE TO VENTILATION LOAD BTU/H: 1593

STRUCTURAL HEAT LOSS: 37747

TOTAL COMBINED HEAT LOSS BTU/H: 39340

SITE NAME: MINNISSALE HOMES CORP
BUILDER: GREENPARK HOMES

TYPE: HEMLOCK 4

DATE: Aug-18

GFA: 1960 LO# 79574

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 37,747 TOTAL HEAT GAIN 24,576
AIR FLOW RATE CFM 29.96 AIR FLOW RATE CFM 46.02

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

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

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	10	9	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 diff 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

FAN SPEED LOW
MEDLOW
MEDIUM
MEDIUM HIGH
HIGH 1131

DESIGN CFM = 1131
CFM @ 0.5" E.S.P.

TEMPERATURE RISE 47 °F

RUN #	1	2	3	4	5	6	7	8	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-2	MBR	MUD	LIV	DIN	LIV	KT/FM	KT/FM	LAUN	W/R	FOY	KT/FM	BAS	BAS	BAS	BAS
RM LOSS MBH	1.09	1.47	0.33	1.45	2.43	1.41	0.72	1.45	1.09	1.13	1.55	1.78	1.55	1.76	1.76	0.69	0.35	1.64	1.76	3.09	3.09	3.09	3.09
CFM PER RUN HEAT	33	44	10	43	73	42	22	43	33	34	46	53	46	53	53	21	10	49	53	93	93	93	93
RM GAIN MBH	1.28	1.02	0.08	1.28	2.46	1.95	0.38	1.28	1.28	0.70	1.38	1.47	1.38	1.86	1.86	0.96	0.06	0.69	1.86	0.34	0.34	0.34	0.34
CFM PER RUN COOLING	59	47	4	59	113	90	17	59	59	32	64	68	64	86	86	44	3	32	86	16	16	16	16
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.15	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	46	57	52	27	35	32	29	5	53	38	29	10	30	34	42	20	38	19	37	25	42	11	24
EQUIVALENT LENGTH	120	130	120	150	160	170	180	160	150	150	180	170	190	140	140	190	120	180	150	150	150	130	170
TOTAL EFFECTIVE LENGTH	166	187	172	177	195	202	209	165	203	188	209	180	220	174	182	210	158	199	187	175	192	141	194
ADJUSTED PRESSURE	0.1	0.09	0.1	0.1	0.08	0.08	0.08	0.1	0.08	0.09	0.08	0.1	0.08	0.09	0.09	0.08	0.11	0.09	0.09	0.09	0.08	0.11	0.08
ROUND DUCT SIZE	5	4	4	5	6	6	4	5	5	4	5	5	5	6	6	4	4	4	6	6	6	6	6
HEATING VELOCITY (ft/min)	242	505	115	316	372	214	252	316	242	390	338	389	338	270	270	241	115	562	270	474	474	474	474
COOLING VELOCITY (ft/min)	433	539	46	433	576	459	195	433	433	367	470	499	470	438	438	505	34	367	438	82	82	82	82
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10
TRUNK	A	B	B	E	D	D	E	E	A	B	D	E	D	A	B	E	B	D	B	A	B	E	D

RUN #	ROOM NAME	RM LOSS MBH	CFM PER RUN HEAT	RM GAIN MBH	CFM PER RUN COOLING	ADJUSTED PRESSURE	ACTUAL DUCT LGH	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	ROUND DUCT SIZE	HEATING VELOCITY (ft/min)	COOLING VELOCITY (ft/min)	OUTLET GRILL SIZE	TRUNK
1	MBR	1.09	33	1.28	59	0.17	46	120	166	0.1	5	242	433	3X10	A
2	ENS	1.47	44	1.02	47	0.17	57	130	187	0.09	4	505	539	3X10	B
3	WIC	0.33	10	0.08	4	0.17	52	120	172	0.1	4	115	46	3X10	B
4	BED-2	1.45	43	1.28	59	0.17	27	150	177	0.1	5	316	433	3X10	E
5	BED-3	2.43	73	2.46	113	0.15	35	160	195	0.08	6	372	576	4X10	D
6	BED-4	1.41	42	1.95	90	0.16	32	170	202	0.08	6	214	459	4X10	D
7	BATH	0.72	22	0.38	17	0.17	29	180	209	0.08	4	252	195	3X10	E
8	BED-2	1.45	43	1.28	59	0.17	5	160	165	0.1	5	316	433	3X10	E
10	MBR	1.09	33	1.28	59	0.17	53	150	203	0.08	5	242	433	3X10	A
11	MUD	1.13	34	0.70	32	0.17	38	150	188	0.09	4	390	367	3X10	B
12	LIV	1.55	46	1.38	64	0.17	29	180	209	0.08	5	338	470	3X10	D
13	DIN	1.78	53	1.47	68	0.17	10	170	180	0.1	5	389	499	3X10	E
14	LIV	1.55	46	1.38	64	0.17	30	190	220	0.08	5	338	470	3X10	D
15	KT/FM	1.76	53	1.86	86	0.16	34	140	174	0.09	6	270	438	4X10	A
16	KT/FM	1.76	53	1.86	86	0.16	42	140	182	0.09	6	270	438	4X10	B
17	LAUN	0.69	21	0.96	44	0.17	20	190	210	0.08	4	241	505	3X10	E
18	W/R	0.35	10	0.06	3	0.17	38	120	158	0.11	4	115	34	3X10	B
19	FOY	1.64	49	0.69	32	0.17	19	180	199	0.09	4	562	367	3X10	D
20	KT/FM	1.76	53	1.86	86	0.16	37	150	187	0.09	6	270	438	4X10	B
21	BAS	3.09	93	0.34	16	0.16	25	150	175	0.09	6	474	82	4X10	A
22	BAS	3.09	93	0.34	16	0.16	42	150	192	0.08	6	474	82	4X10	B
23	BAS	3.09	93	0.34	16	0.16	11	130	141	0.11	6	474	82	4X10	E
24	BAS	3.09	93	0.34	16	0.16	24	170	194	0.08	6	474	82	4X10	D

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	212	0.08	7.8	8	X	8	477	TRUNK G	0	0.00	0	0	X	8	0	TRUNK O	0	0.06	0	0	X	8	0
TRUNK B	297	0.08	8.9	10	X	8	535	TRUNK H	0	0.00	0	0	X	8	0	TRUNK P	0	0.06	0	0	X	8	0
TRUNK C	509	0.08	10.9	14	X	8	654	TRUNK I	0	0.00	0	0	X	8	0	TRUNK Q	0	0.06	0	0	X	8	0
TRUNK D	349	0.08	9.5	12	X	8	524	TRUNK J	0	0.00	0	0	X	8	0	TRUNK R	0	0.06	0	0	X	8	0
TRUNK E	624	0.08	11.8	16	X	8	702	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

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
AIR VOLUME	135	95	95	155	375	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	45	37	49	23	21	46	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	140	175	135	235	225	175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	185	212	184	258	246	221	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.08	0.07	0.08	0.06	0.06	0.07	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	14.80
ROUND DUCT SIZE	6.6	6	5.8	7.5	10.4	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	0
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	0

TYPE: HEMLOCK 4
SITE NAME: MINNISSALE HOMES CORP

LO # 79574

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	3	@ 21.2 cfm	63.6	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			190.8 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		79.6 cfm

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5

Total Ventilation Capacity	190.8	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	111.3	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	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 # Building Permit #

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: *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#: 79574

Model: HEMLOCK 4

Builder: GREENPARK HOMES

Date: 8/7/2018

Volume Calculation
Air Change & Delta T Data
House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	956	9	8604
First	956	10	9560
Second	1004	9	9036
Third	0	9	0
Fourth	0	9	0
Total:			27,200.0 ft³
Total:			770.2 m³

WINTER NATURAL AIR CHANGE RATE	0.367
SUMMER NATURAL AIR CHANGE RATE	0.115

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
6.2.6 Sensible Gain due to Air Leakage

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

0.367 x 213.95 x 41 °C x 1.2 = 3881 W

= 13241 Btu/h

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

0.115 x 213.95 x 6 °C x 1.2 = 180 W

= 615 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 CFM x 74 °F x 1.08 x 0.25 = 1593 Btu/h

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

80 CFM x 11 °F x 1.08 x 0.25 = 236 Btu/h

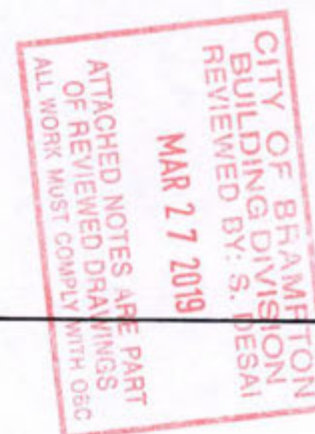
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)

$$HL_{airr} = \text{Level Factor} \times HL_{airbv} \times ((HL_{agcr} + HL_{bgcr}) + (HL_{agclel} + HL_{bgclel}))$$

Level	Level Factor (LF)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HL _{clel})
1	0.5	13,241	5,733	1.155
2	0.3		9,299	0.427
3	0.2		9,211	0.288
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 HLairv = 0



HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** HEMLOCK 4**SFQT:** 1960**LO#** 79574**BUILDER:** GREENPARK HOMES**SITE:** MINNISSALE 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:	ATTACHED	# 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):	27200.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
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: 50.0 ft	WIDTH: 26.0 ft	EXPOSED PERIMETER:	102.0 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

Compliance Package**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	-

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. DESAI
MAR 27 2019
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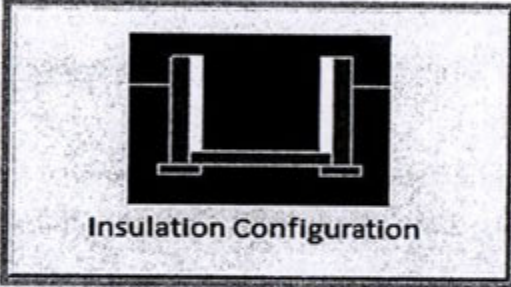
INDIVIDUAL BCIN: 19669

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):	15.2	 Insulation Configuration
Floor Width (m):	7.9	
Exposed Perimeter (m):	31.1	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.9	
Door Area (m ²):	3.7	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	988	

TYPE: HEMLOCK 4
LO# 79574

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):	7.62			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	770.2			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1026.7 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):	0.367			
Cooling Air Leakage Rate (ACH/H):	0.115			

TYPE: HEMLOCK 4
LO# 79574

CITY OF BRAMPTON
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UNFINISHED
BASEMENT

INSTALLATION OF HVAC EQUIP.
SHALL CONFORM TO MANUFACTURER'S SPECIFICATIONS
AND MANUALS

B-10X8

A-8X8

X-30X8
24X10

C-14X8

Y-10X8

UNFINISHED
BASEMENT

MECHANICAL VENTILATION SHALL BE PROVIDED
CONFORMANCE WITH OBC DIV. B, 9.32.3 REQUIREMENTS.

PARTIAL BASEMENT PLAN
W.O.D. CONDITION

COLD
STORAGE

BASEMENT PLAN
ELEV. '1' & '2'

THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S)
SHALL COMPLY WITH OBC DIV. B, 9.33.4 REQUIREMENTS.

A HEAT RECOVERY VENTILATOR SHALL BE INSTALLED IN
COMPLIANCE WITH OBC DIV. B, 6.2.1.6, 9.32.3.6(3), 9.32.3.11
AND HRA DIGEST REQUIREMENTS.

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.

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.

CSA-F280-12
PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.
	FLOOR SUPPLY AIR GRILLE		8" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" 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	

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Client
GREENPARK HOMES
Project Name
**MINNISALE HOMES CORP.
BRAMPTON, ONTARIO**
HEMLOCK 4 1960 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

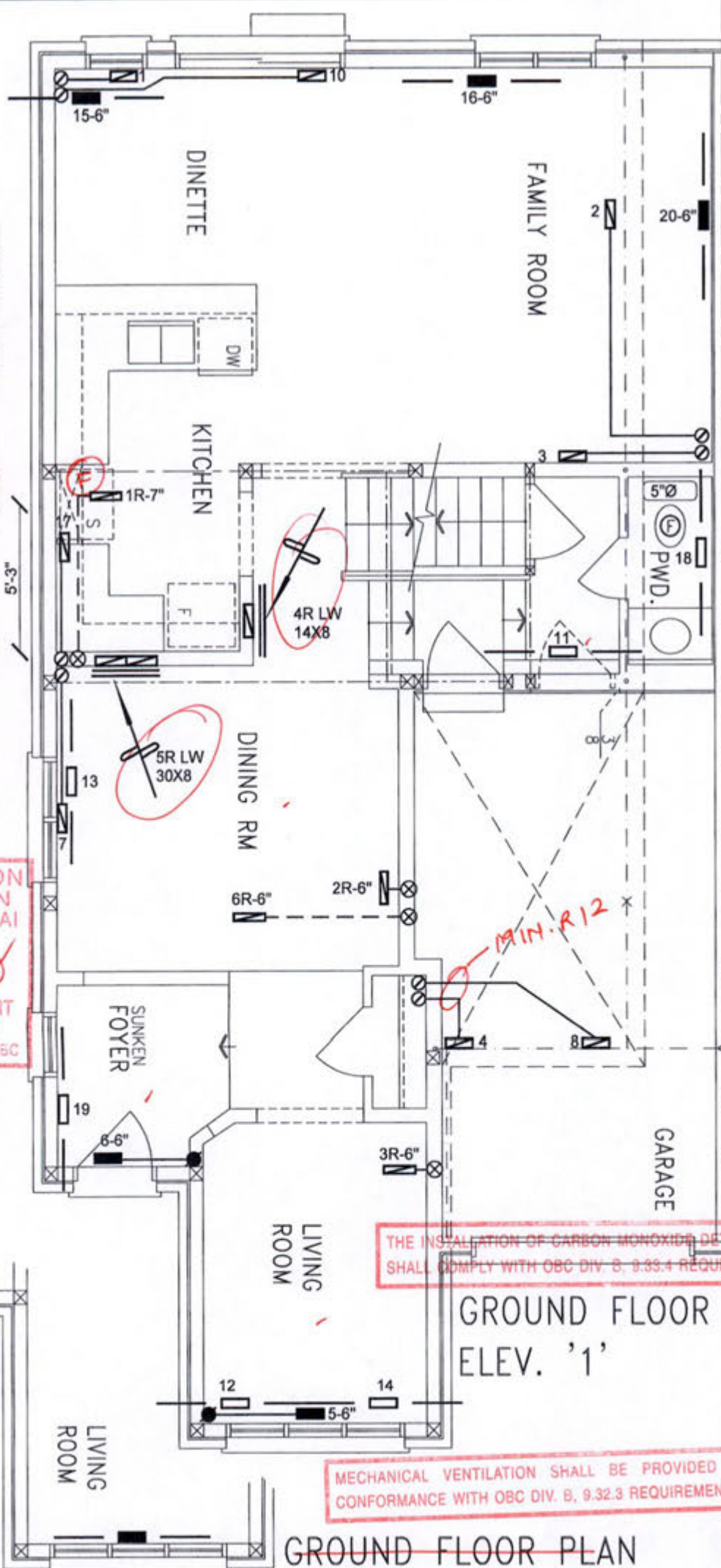
Installation to comply with the latest Ontario Building Code. All supply
branch outlets shall be equipped with a manual balancing damper.
Ductwork which passes through the garage or unheated spaces shall be
adequately insulated and be gas-proofed.

HEAT LOSS 39340 BTU/H	# OF RUNS	S/A	R/A	FANS
UNIT DATA	3RD FLOOR			
MAKE	2ND FLOOR	10	4	2
GOODMAN	1ST FLOOR	9	2	2
MODEL	BASEMENT	4	1	0
GMEC960603BNA-60				
INPUT	60	MBTUH		
OUTPUT	57.6	MBTUH		
COOLING	2.0	TONS		
FAN SPEED	1131	cfm @ 0.5" w.g.		

Sheet Title
**BASEMENT
HEATING
LAYOUT**
Date
AUG/2018
Scale
3/16" = 1'-0"
BCIN# 19669
LO# 79574

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).

CITY OF BRAMPTON
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THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S)
SHALL COMPLY WITH OBC DIV. B, 9.33.4 REQUIREMENTS.

GROUND FLOOR PLAN
ELEV. '1'

MECHANICAL VENTILATION SHALL BE PROVIDED IN
CONFORMANCE WITH OBC DIV. B, 9.32.3 REQUIREMENTS.

GROUND FLOOR PLAN
ELEV. '2'

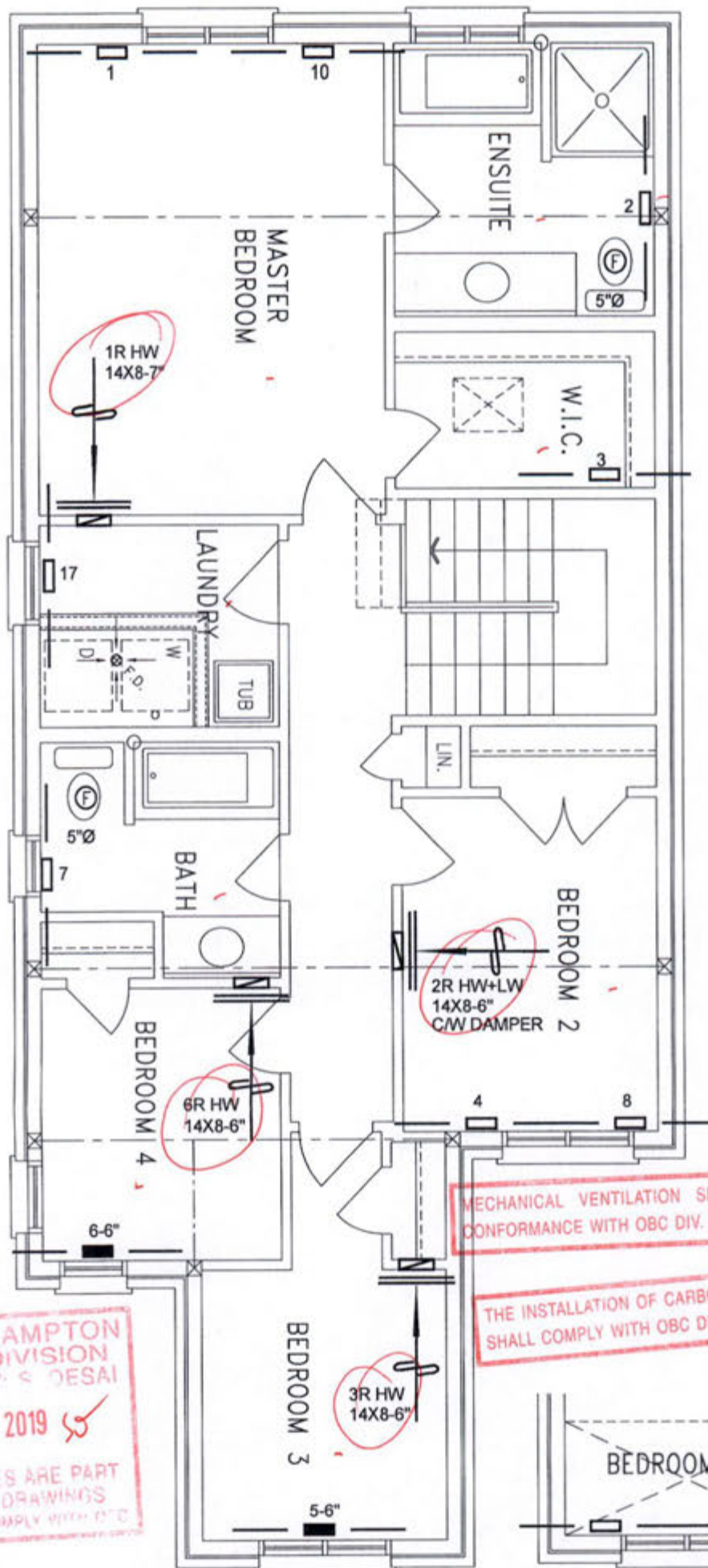
CSA-F280-12
PACKAGE A1

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.

HVAC LEGEND							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	FLOOR SUPPLY AIR GRILLE 8" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER

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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@hvacadesigns.ca Web: www.hvacadesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name MINNISALE HOMES CORP. BRAMPTON, ONTARIO			Date AUG/2018	Scale 3/16" = 1'-0"
HEMLOCK 4 1960 sqft		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.	BCIN# 19669	
			LO#	79574



CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. DESAI
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MECHANICAL VENTILATION SHALL BE PROVIDED IN
CONFORMANCE WITH OBC DIV. B, 9.32.3 REQUIREMENTS.

THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S)
SHALL COMPLY WITH OBC DIV. B, 9.33.4 REQUIREMENTS.

SECOND FLOOR PLAN
ELEV. '1'

SECOND FLOOR PLAN
ELEV. '2'

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.

CSA-F280-12
PACKAGE A1

HVAC LEGEND							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	FLOOR 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

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Client		HVACDESIGNS LTD. 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacadesigns.ca Web: www.hvacadesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title	
GREENPARK HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name		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.	Date	
MINNISALE HOMES CORP. BRAMPTON, ONTARIO			AUG/2018	
			Scale	
			3/16" = 1'-0"	
			BCIN# 19669	
HEMLOCK 4			LO#	
1960 sqft			79574	