

SITE NAME: MINNISALE HOMES CORP
 BUILDER: GREENPARK HOMES

TYPE: HEMLOCK 4 GFA: 1960

 DATE: Aug-18
 LOM: 79574

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

 HEAT LOSS AT °F. 74
 HEAT GAIN AT °F. 11

 CSA-F280-12
 SB-12 PACKAGE A1

LOT 36L

ROOM USE	EXP. WALL	CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH						
			29	20	5	29	32	16	8						
			9	9	9	9	9	9	9						
FACTORS															
GRS.WALL AREA	LOSS	GAIN	261	180	45	281	288	144	72						
GLAZING	LOSS	GAIN													
NORTH	20.8	15.5	0	0	0	0	0	0	0						
EAST	20.8	41.0	0	0	0	0	0	0	0						
SOUTH	20.8	24.4	0	0	0	0	0	0	0						
WEST	20.8	41.0	18	374	739	14	291	575	0						
SKYL.T.	36.4	100.7	0	0	0	0	0	0	0						
DOORS	24.7	3.7	0	0	0	0	0	0	0						
NET EXPOSED WALL	4.4	0.6	243	1069	157	166	723	107	45						
NET EXPOSED BMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0						
EXPOSED CLG	1.3	0.6	208	261	116	100	125	56	50						
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0						
EXPOSED FLOOR	2.6	0.4	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						
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					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		264	0	0					0	
DUCT GAIN				0	0		179	0	0					0	
HEAT GAIN PEOPLE	240		2	480	0	0	1	240	1					0	
HEAT GAIN APPLIANCES/LIGHTS				411	0		411	411	411					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	2405	1949					375	

CITY OF BRAMPTON
 BUILDING DIVISION
 REVIEWED BY: S. HANNA
 JAN 21 2019
 ATTACHED NOTES ARE PART
 OF REVIEWED DRAWINGS
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ROOM USE	EXP. WALL	CLG. HT.	LIV	DIN	KITCHEN	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	209	447	63	60	121	88						
GLAZING	LOSS	GAIN													
NORTH	20.8	15.5	0	0	0	0	0	0	0						
EAST	20.8	41.0	34	706	1396	0	0	0	0						
SOUTH	20.8	24.4	0	0	0	0	0	0	0						
WEST	20.8	41.0	0	0	0	0	0	0	0						
SKYL.T.	36.4	100.7	0	0	0	0	0	0	0						
DOORS	24.7	3.7	0	0	0	0	0	0	0						
NET EXPOSED WALL	4.4	0.6	337	1486	217	177	769	114	348						
NET EXPOSED BMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0						
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0						
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0						
EXPOSED FLOOR	2.6	0.4	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			2173		1247		3701		536						
SUB TOTAL HT GAIN				1613	675		3642		789						
LEVEL FACTOR / MULTIPLIER	0.30	0.43		0.30	0.43		0.30	0.43	0.30					0.30	0.43
AIR CHANGE HEAT LOSS			928		533		1581		490					337	
AIR CHANGE HEAT GAIN				106	44		239		3					8	
DUCT LOSS			0		0		0		0					0	
DUCT GAIN				0	0		0		0					0	
HEAT GAIN PEOPLE	240		0	0	0	0	0	0	0					0	
HEAT GAIN APPLIANCES/LIGHTS				411	411		411		411					0	
TOTAL HT LOSS BTU/H			3191		1780		5282		690					1126	
TOTAL HT GAIN x 1.3 BTU/H				2769	1470		5580		958					897	

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: 39349

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
 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 @ 0.5" E.S.P.

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.

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

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	130	170	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	WR	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	6	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

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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 A	212	0.08	7.8	8	X	8	477			TRUNK G	0	0.00	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 C	509	0.08	10.9	14	X	8	654			TRUNK I	0	0.00	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 E	624	0.08	11.8	16	X	8	702			TRUNK K	0	0.00	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		

RETURN AIR #	1	2	3	4	5	6													BR
AIR VOLUME	135	95	95	155	375	95	0	0	0	0	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	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	15	
EQUIVALENT LENGTH	140	175	135	235	225	175	0	0	0	0	0	0	0	0	0	0	0	180	
TOTAL EFFECTIVE LH	185	212	184	258	246	221	1	1	1	1	1	1	1	1	1	1	1	195	
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	0.08		
ROUND DUCT SIZE	6.6	6	5.8	7.5	10.4	6	0	0	0	0	0	0	0	0	0	0	0	7.4	
INLET GRILL SIZE	8	8	8	8	8	8	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	
INLET GRILL SIZE	14	14	14	14	30	14	0	0	0	0	0	0	0	0	0	0	0	14	

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	0	0	0	0	0	0	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	6.8	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	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	0

TYPE: HEMLOCK 4
SITE NAME: MINNISALE 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	79.5	cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.6.
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
79.5 CFM	74 F
X	X
FACTOR	% LOSS
1.08	0.25

SUPPLEMENTAL FANS		PANASONIC
Location	Model	cfm
ENS	FV-05-11VK1	50
BATH	FV-05-11VK1	50
W/R	FV-05-11VK1	50
		cfm
		sones

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

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.8 OF THE BUILDING CODE.
INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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
House Volume

Level	Floor Area (ft ²)	Floor Height (ft)	Volume (ft ³)
Bsmt	956	9	8604
First	956	10	9560
Second	1004	9	9036
Third	0	9	0
Fourth	0	9	0
Total:			27,200.0 ft ³
Total:			770.2 m ³

Air Change & Delta T Data

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

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

0.367 x 213.95 x 41 °C x 1.2 = 3881 W

= 13241 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

0.115 x 213.95 x 6 °C x 1.2 = 180 W

= 615 Btu/h

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

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

6.2.7 Sensible heat Gain due to Ventilation

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

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)

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

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 / HL _{level})
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 HLairve = 0

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

JAN 21 2019

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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 (ft ³):	27200.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 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

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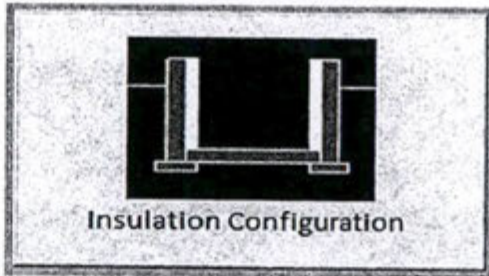
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A1**

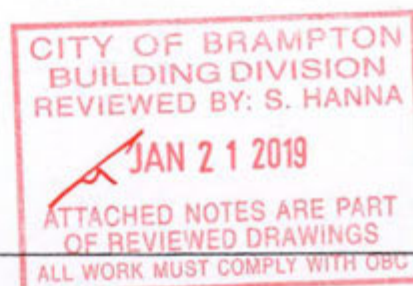
Nominal	Min. Eff.
60	59.22
31	27.65
31	29.80
22	17.03
20 ci	21.12
-	-
10	10
10	11.13
0.28	-
0.49	-
0.96	-
75%	-
0.8	-

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):	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
Diameter (mm):	0	0	0
		#4	0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.367		
Cooling Air Leakage Rate (ACH/H):	0.115		

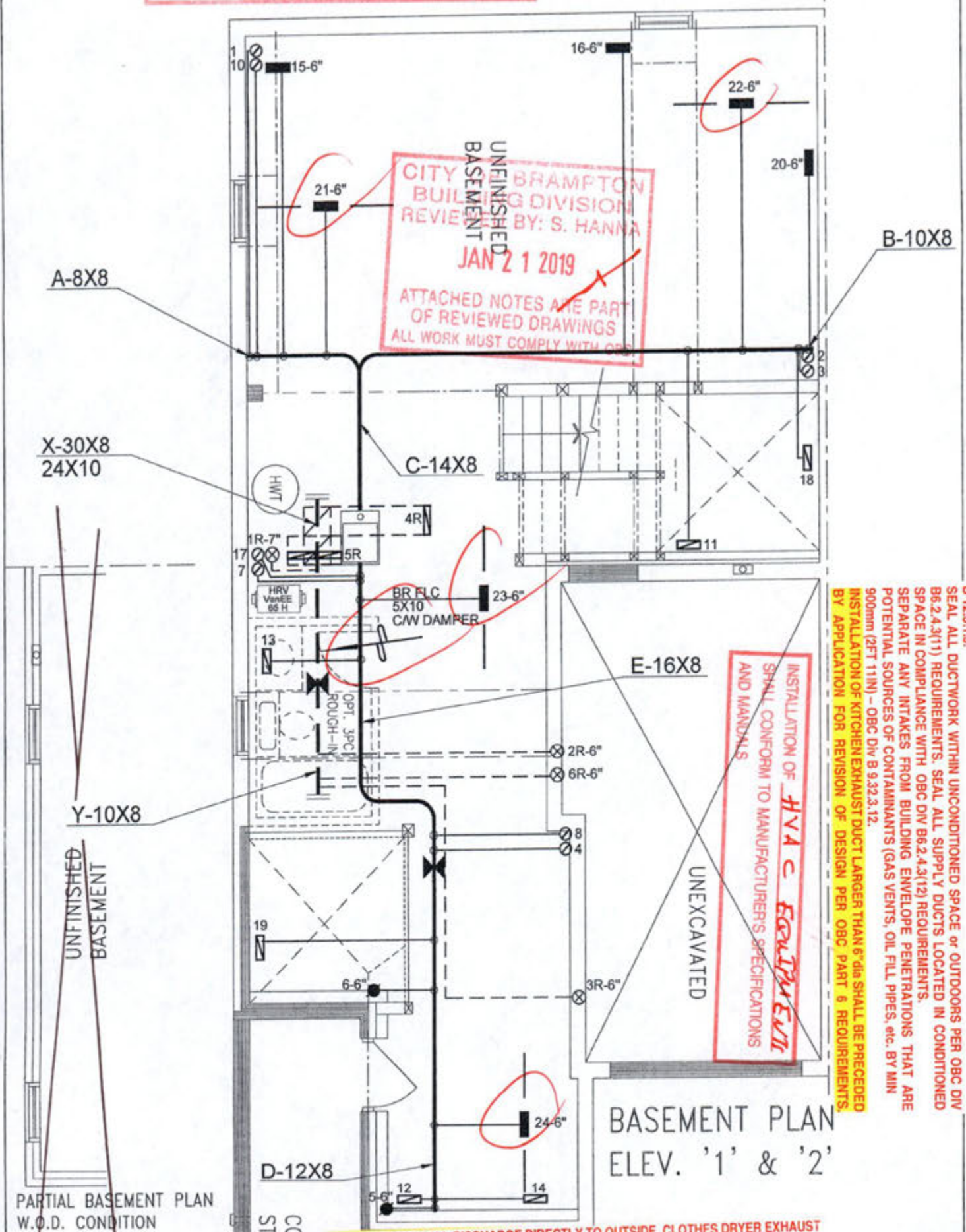
TYPE: HEMLOCK 4
LO# 79574CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. HANNA

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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.



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).

CSA-F280-12
PACKAGE A1

I MICHAEL O'ROURKE HAVE REVIEWED 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.

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
—	FLOOR SUPPLY AIR GRILLE	—	8" 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	—	8" SUPPLY AIR STACK 2nd FLOOR	—	FRA-FLOOR RETURN AIR GRILLE	—	REDUCER

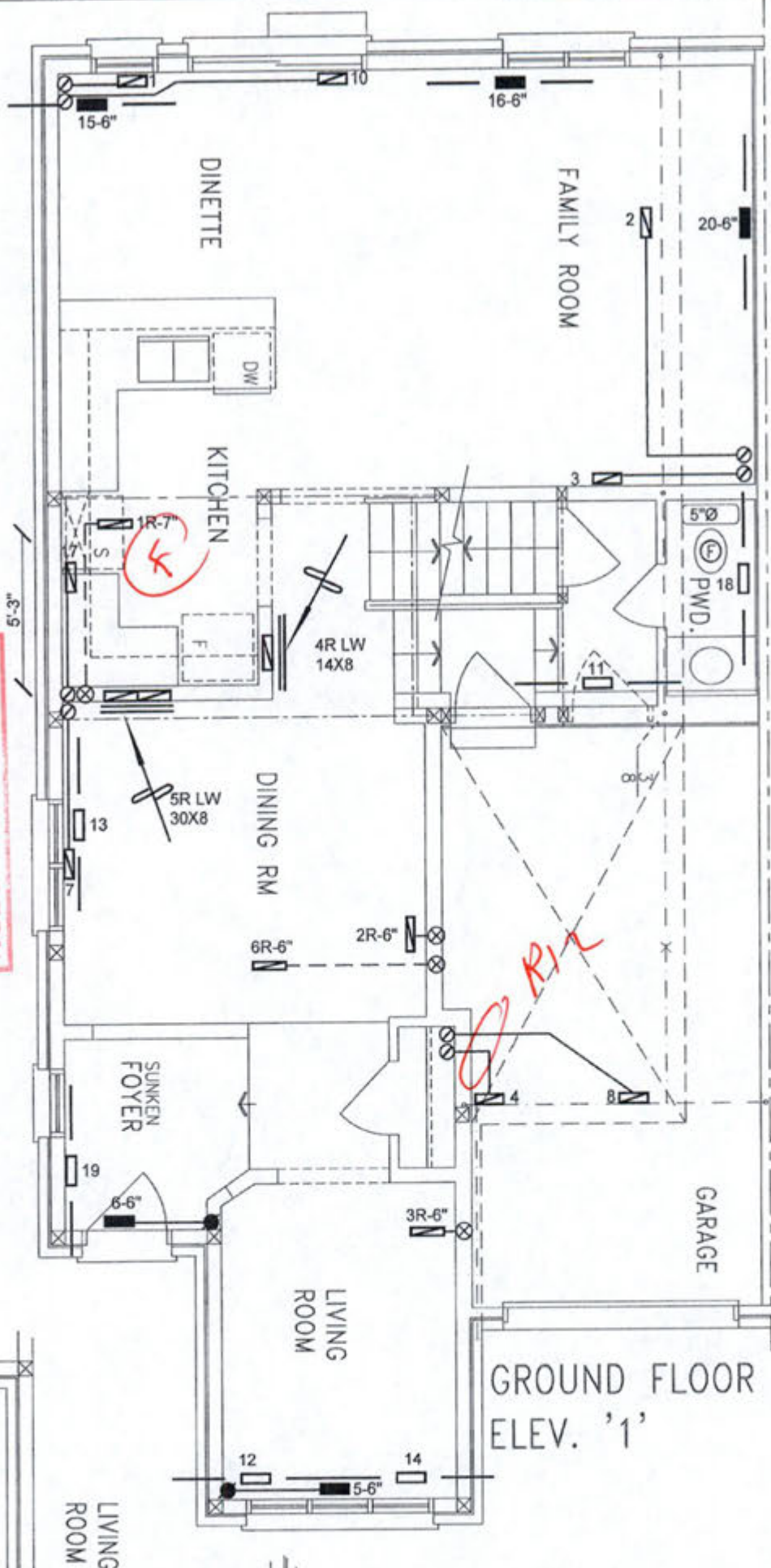
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Client GREENPARK HOMES Project Name MINNISALE HOMES CORP. BRAMPTON, ONTARIO LOT 36L HEMLOCK 4 1960 sqft	HVAC DESIGNS LTD. 375 Finley Ave. Suite 202 - Ajax, Ontario L1G 2E2 Tel: 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca 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 39340 BTUH UNIT DATA MAKE GOODMAN MODEL GMCE9606038NA-60 INPUT 60 MBTUH OUTPUT 57.6 MBTUH COOLING 2.0 TONS FAN SPEED 1131 cfm @ 0.5" w.c.	# OF RUNS S/A R/A FANS 3RD FLOOR 2ND FLOOR 10 4 2 1ST FLOOR 9 2 2 BASEMENT 4 1 0 ALL S/A DIFFUSERS 4 "10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5" 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# 79574
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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 ENRIDGE FOR INSPECTION AT
1-800-765-1314

CITY OF BRAMPTON
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SUNKEN
FOYER



GROUND FLOOR PLAN
ELEV. '1'

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

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FLOOR SUPPLY AIR GRILLE		8" SUPPLY AIR BOOT ABOVE		14" x 14" RETURN AIR GRILLE
	8" SUPPLY AIR BOOT FROM 2nd FLOOR		30" x 8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR BOOT ABOVE		8" SUPPLY AIR STACK 2nd FLOOR		RETURN AIR STACK 2nd FLOOR
			8" SUPPLY AIR STACK 2nd FLOOR		8" SUPPLY AIR STACK 2nd FLOOR
			8" SUPPLY AIR STACK 2nd FLOOR		8" SUPPLY AIR STACK 2nd FLOOR

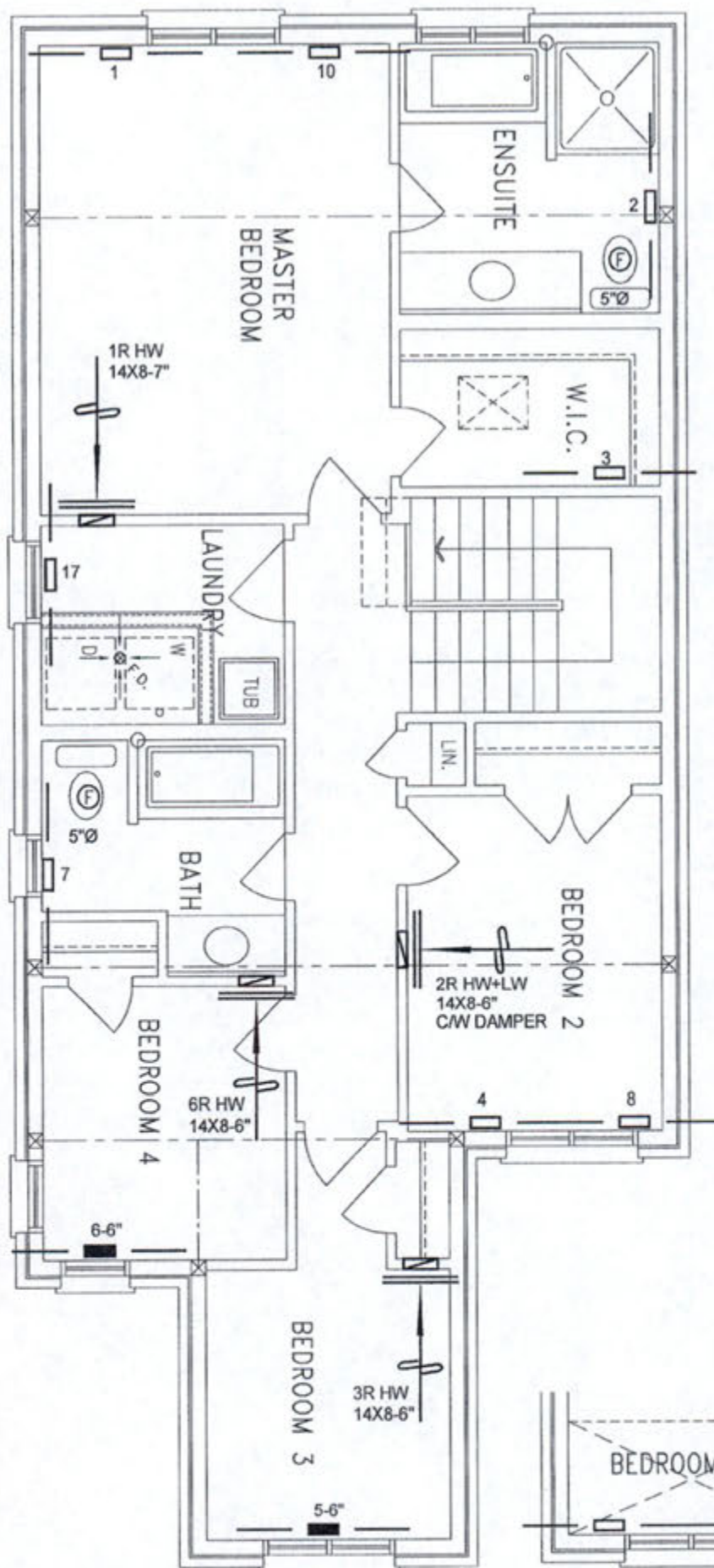
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	8" SUPPLY AIR STACK 2nd FLOOR		8" SUPPLY AIR STACK 2nd FLOOR
	8" SUPPLY AIR STACK 2nd FLOOR		8" SUPPLY AIR STACK 2nd FLOOR
	8" SUPPLY AIR STACK 2nd FLOOR		8" SUPPLY AIR STACK 2nd FLOOR
	8" SUPPLY AIR STACK 2nd FLOOR		8" SUPPLY AIR STACK 2nd FLOOR

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Client
GREENPARK HOMES
Project Name
MINNISALE HOMES CORP.
BRAMPTON, ONTARIO
LOT 36L
HEMLOCK 4 1960 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1B 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
**FIRST FLOOR
HEATING
LAYOUT**
Date
AUG/2018
Scale
3/16" = 1'-0"
BCIN# 19669
LO# 79574



SECOND FLOOR PLAN
ELEV. '1'



SECOND FLOOR PLAN
ELEV. '2'

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

CSA-F280-12
PACKAGE A1

HVAC LEGEND

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

No.	Description	Date
2.		
1.		

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Sheet Title
**SECOND FLOOR
HEATING
LAYOUT**
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AUG/2018
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BCIN# 19669
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