

LOT 35R

SITE NAME: MINNISALE HOMES CORP

BUILDER: GREENPARK HOMES

TYPE: HEMLOCK 4

GFA: 1960

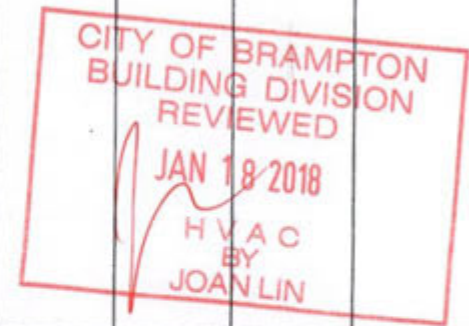
 DATE: Aug-18
 LOR: 79574

 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

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	LOSS	GAIN	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH
						29	20	5	29	32	16	8
						9	9	9	9	9	9	9
GRS.WALL AREA	LOSS	GAIN		261		180		45	261	288	144	72
GLAZING	LOSS	GAIN										
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	0	0	0	18	374	739	21
SOUTH	20.8	24.4	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
SKYL.	36.4	100.7	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
NET EXPOSED WALL	4.4	0.6	243	1069	157	166	723	107	243	1069	157	124
NET EXPOSED BMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	208	261	116	100	125	56	58	63	28	124
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	136	339	50	0
BASEMENT/CRAWL HEAT LOSS												
SLAB ON GRADE HEAT LOSS												
SUBTOTAL HT LOSS			1693			1139		259	2047	1884	1094	559
SUB TOTAL HT GAIN				1012		738		67	1069	1161	796	271
LEVEL FACTOR / MULTIPLIER	0.20	0.29				0.20	0.29		0.20	0.29		0.20
AIR CHANGE HEAT LOSS			487			328		74	589	542	314	161
AIR CHANGE HEAT GAIN				56		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	1	240	1	240
HEAT GAIN APPLIANCES/LIGHTS			411			0		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	2455	1949	375



ROOM USE	EXP. WALL	CLG. HT.	FACTORS	LOSS	GAIN	LJV	DIN	KT/P/M	LAUN	WIR	FOY	MUD	WOD	BAS
						39	21	47	7	8	11	8	26	102
						10	10	10	9	10	11	11	9	9
GRS.WALL AREA	LOSS	GAIN		371		290		447	63	50	121	88	234	768
GLAZING	LOSS	GAIN												
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0	0	0	0
EAST	20.8	41.0	34	706	1396	0	0	0	0	0	3	62	123	0
SOUTH	20.8	24.4	0	0	0	23	478	561	0	0	10	208	244	0
WEST	20.8	41.0	0	0	0	0	0	0	9	187	220	0	0	0
SKYL.	36.4	100.7	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
NET EXPOSED WALL	4.4	0.6	337	1466	217	177	769	114	84	235	35	50	218	32
NET EXPOSED BMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	91	114	51	20	25	11
NO ATTIC EXPOSED CLG	2.7	1.2	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
BASEMENT/CRAWL HEAT LOSS														
SLAB ON GRADE HEAT LOSS														
SUBTOTAL HT LOSS			2173			1247		3701	536	243	1147	789	0	3368
SUB TOTAL HT GAIN				1613		675		3642						
LEVEL FACTOR / MULTIPLIER	0.30	0.43				0.30	0.43		0.20	0.29		0.30	0.43	
AIR CHANGE HEAT LOSS			528			533		1581	154	104	490	337		6621
AIR CHANGE HEAT GAIN				106		44		239		20	3	33		64
DUCT LOSS			0			0		0	0	0	0	0		0
DUCT GAIN				0		0		0	0	0	0	0		0
HEAT GAIN PEOPLE	240	0	0	0		0	0	0	0	0	0	0		0
HEAT GAIN APPLIANCES/LIGHTS			411			411		411	0	0	0	0		0
TOTAL HT LOSS BTU/H			3101			1780		5282	690	347	1636	1126		11175
TOTAL HT GAIN x 1.3 BTU/H				2769		1479		5580		558	689	697		534

TOTAL HEAT GAIN BTU/H:

24812

TONS: 2.07

LOSS DUE TO VENTILATION LOAD BTU/H: 1993

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
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	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

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED

JAN 18 2018

H V A C
BY
JOAN LIN

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	212	0.08	7.8	8	X	8	477		
TRUNK B	297	0.08	8.9	10	X	8	535		
TRUNK C	509	0.08	10.9	14	X	8	654		
TRUNK D	349	0.08	9.5	12	X	8	524		
TRUNK E	624	0.08	11.8	16	X	8	702		
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	0.06	0	0	X	8	0
TRUNK P	0	0.06	0	0	X	8	0
TRUNK Q	0	0.06	0	0	X	8	0
TRUNK R	0	0.06	0	0	X	8	0
TRUNK S	0	0.06	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
TRUNK X	1131	0.06	15.8	30	X	8	679
TRUNK Y	285	0.06	9.4	10	X	8	513
TRUNK Z	0	0.06	0	0	X	8	0
DROP	1131	0.06	15.8	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	135	95	95	155	375	95	0	0	0	0	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	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	15
EQUIVALENT LENGTH	140	175	135	235	225	175	0	0	0	0	0	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	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	14.80	14.80	14.80	14.80	14.80	14.80	0.08
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	7.4
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	8
	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	14

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	79.5	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

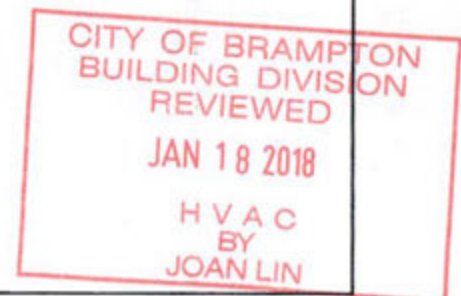
LOCATION OF INSTALLATION
Lot: Concession
Township: Plan:
Address: CITY OF BRAMPTON BUILDING DIVISION
Roll #: REVIEWED Building Permit #

BUILDER: GREENPARK HOMES
Name: *JOAN LIN*
Address: *HVAC BY*
City: *JOAN LIN*
Telephone #: Fax #:

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)																																																												
LOW: 79574	Model: HEMLOCK 4	Builder: GREENPARK HOMES	Date: 8/7/2018																																																									
Volume Calculation			Air Change & Delta T Data																																																									
House Volume <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr> <td>Bsmt</td> <td>956</td> <td>9</td> <td>8604</td> </tr> <tr> <td>First</td> <td>956</td> <td>10</td> <td>9560</td> </tr> <tr> <td>Second</td> <td>1004</td> <td>9</td> <td>9036</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>27,200.0 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>770.2 m³</td> </tr> </tbody> </table>			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	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 20%; text-align: center;">0.367</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.115</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DTDh</td> <td>22</td> <td>-19</td> <td>41</td> <td>74</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>30</td> <td>6</td> <td>11</td> </tr> </table>		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
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																																																									
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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			$HG_{salb} = LR_{atrc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 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																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 74 °F x 1.08 x 0.25 = 1593 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 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)																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times ((HL_{agcr} + HL_{bgcr}) + (HL_{agclevel} + HL_{bgclevel}))$ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HLairve Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{level})</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.5</td> <td rowspan="5" style="text-align: center;">13,241</td> <td>5,733</td> <td>1.155</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>9,299</td> <td>0.427</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>9,211</td> <td>0.288</td> </tr> <tr> <td>4</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> <tr> <td>5</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> </tbody> </table> *HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0					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	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																														
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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

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED
JAN 18 2018
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BY
JOAN LIN

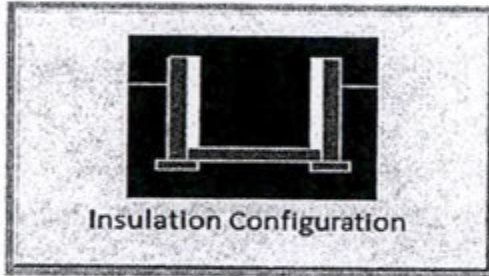
**Compliance Package
A1**

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	-

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	CITY OF BRAMPTON BUILDING DIVISION REVIEWED JAN 18 2018
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	H V A C BY JOAN LIN
Foundation Loads		
Heating Load (Watts):	988	

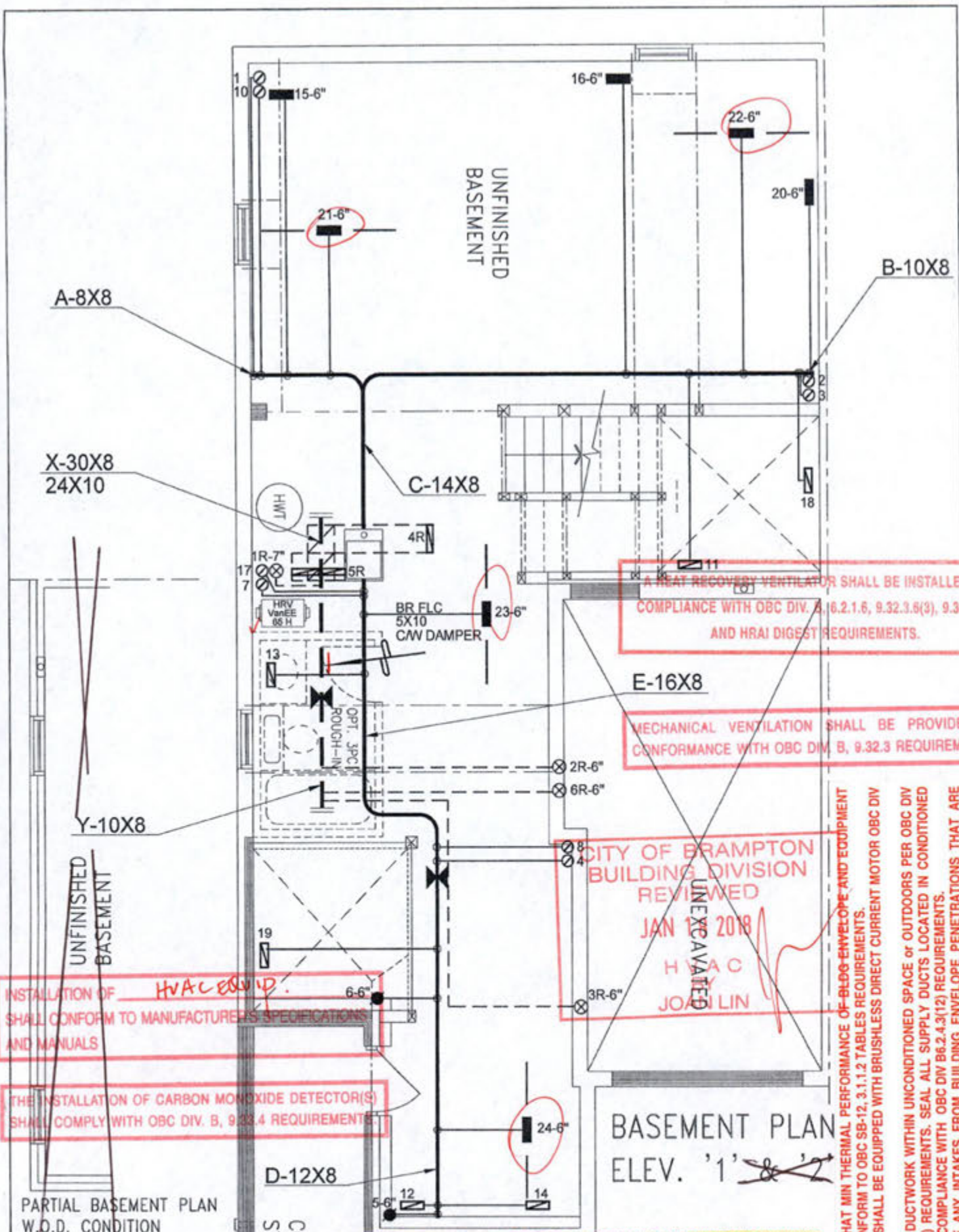
TYPE: HEMLOCK 4
LO# 79574

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
JAN 18 2018
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BY
JOAN LIN



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

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 HRAI DIGEST REQUIREMENTS.

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

CITY OF BRAMPTON
BUILDING DIVISION
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JOAN LIN

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).

ENSURE THAT MIN THERMAL PERFORMANCE OF BLDG ENVELOPE AND EQUIPMENT SHALL CONFORM TO OBC SB-12.3.1.2 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 AS PER OBC Div B PART 6 REQUIREMENTS.

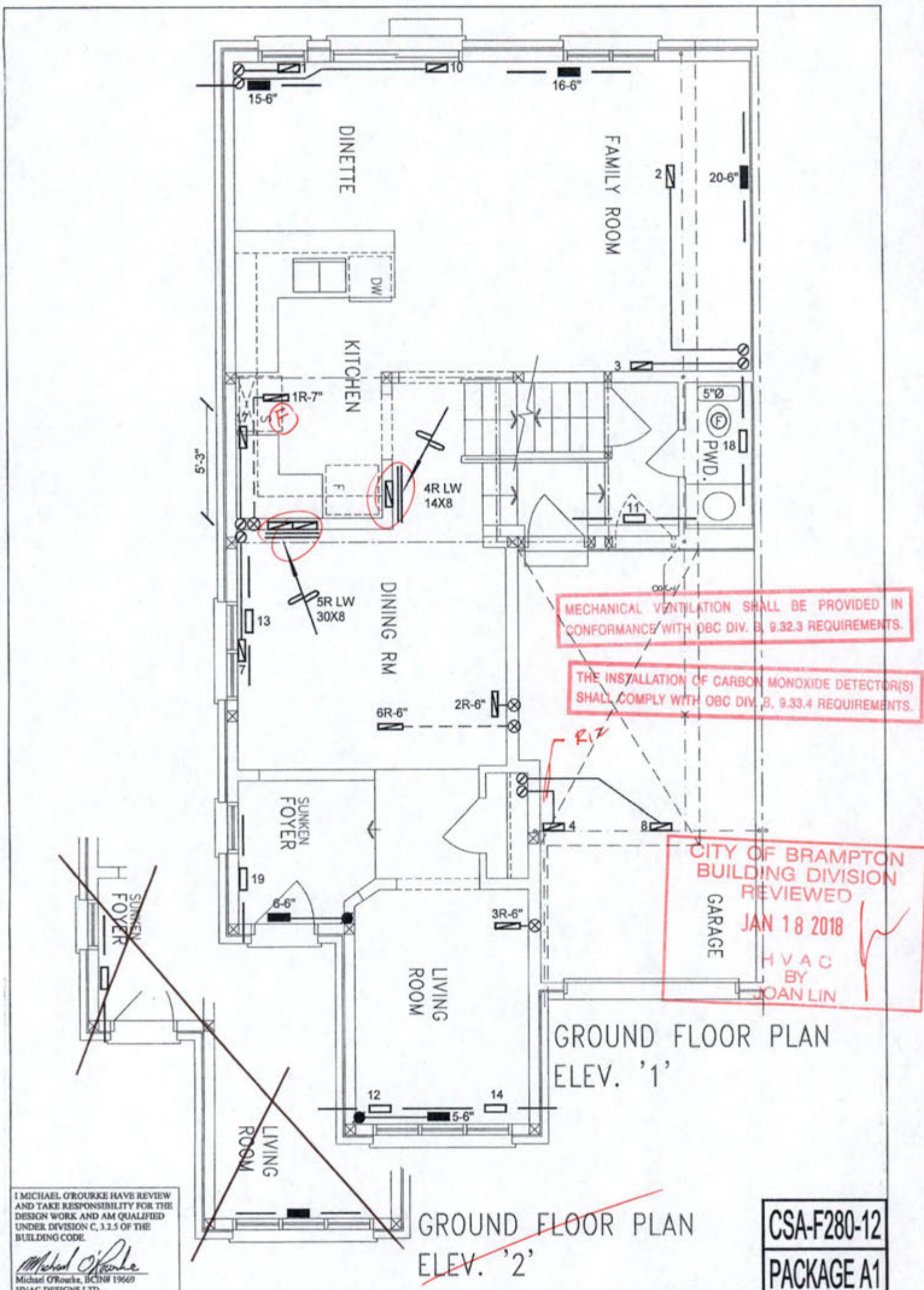
I MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE!

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

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 35R 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	HEAT LOSS 39340 BTUH UNIT DATA MAKE GOODMAN MODEL GMEC96003BNA-60 INPUT 60 MBTUH OUTPUT 57.6 MBTUH COOLING 2.0 TONS FAN SPEED 1131 cfm @ 0.5" w.g.	# OF RUNS S/A R/A FANS 3RD FLOOR 2ND FLOOR 10 4 2 1ST FLOOR 9 2 2 BASEMENT 4 1 0	Sheet Title BASEMENT HEATING LAYOUT Date AUG/2018 Scale 3/16" = 1'-0" BCIN# 19669 LO# 79574



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.

GROUND FLOOR PLAN
ELEV. '2'

CSA-F280-12
PACKAGE A1

HVAC LEGEND

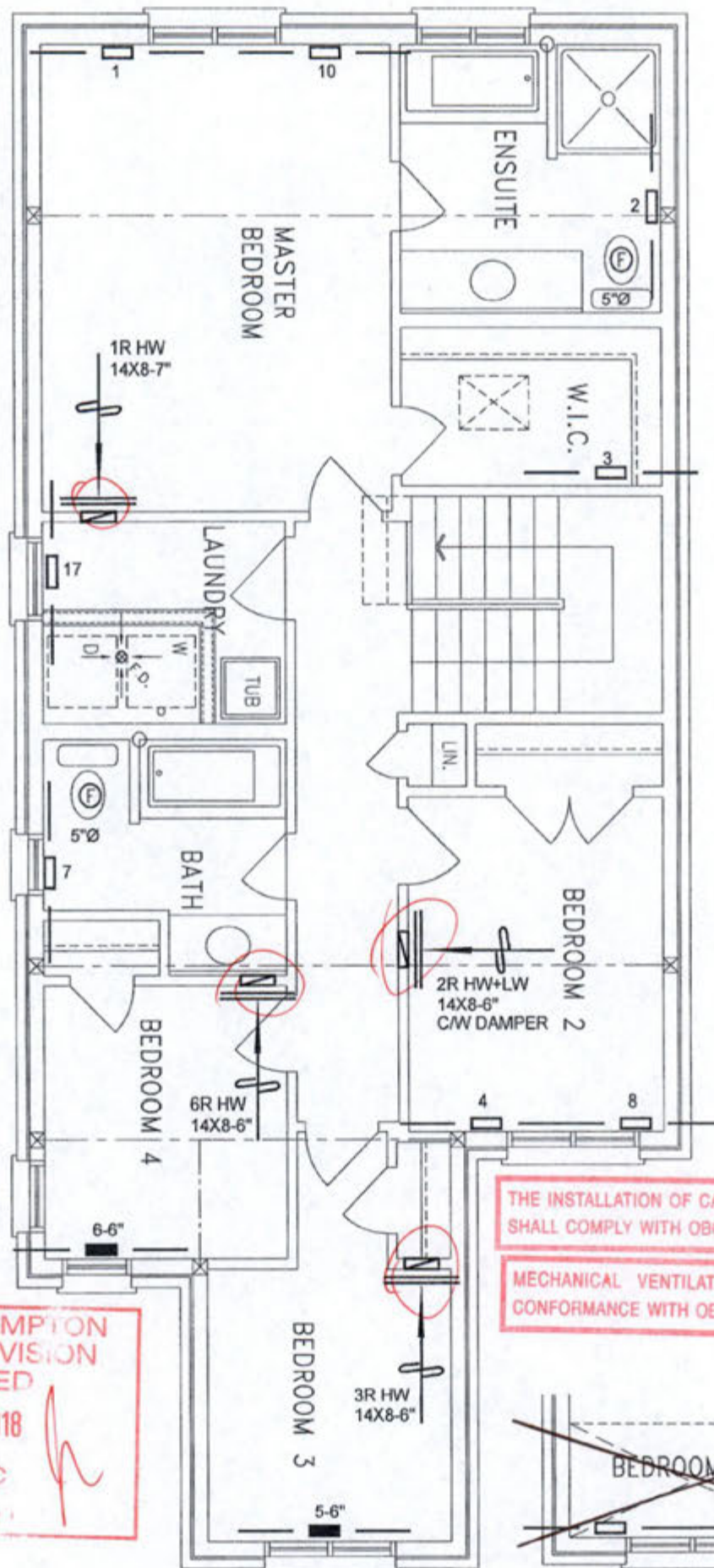
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GREENPARK HOMES
Project Name
MINNISALE HOMES CORP.
BRAMPTON, ONTARIO
LOT 35R
HEMLOCK 4 1960 sqft

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.

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'

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

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

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED

JAN 18 2018

HVAC
BY
JOAN LI

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
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14" RETURN AIR GRILLE
	FLOOR SUPPLY AIR GRILLE 6" BOOT		30" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		RETURN AIR STACK 2nd FLOOR
			FRA FLOOR RETURN AIR GRILLE		REDUCER

REVISIONS

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