

SITE NAME: MINNISALE HOMES CORP

BUILDER: GREENPARK HOMES

TYPE: MILLWOOD 3

GFA: 2622

DATE: Aug-18

LO# 78584

WINTER NATURAL AIR CHANGE RATE 0.382

SUMMER NATURAL AIR CHANGE RATE 0.124

HEAT LOSS AT °F. 74

HEAT GAIN AT °F. 11

CSA-F280-12

SB-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	ENS-2
EXP. WALL	37		37	23	8	10	24	41	8	15
CLG. HT.	9		9	9	9	9	9	9	9	9
FACTORS	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN
GRS.WALL AREA	333		297		72		90		72	
GLAZING	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN
NORTH	20.8	16.5	0	0	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	0	0	0	0	0
SOUTH	20.8	24.4	23	478	661	0	0	0	0	0
WEST	20.8	41.0	34	706	1396	13	270	534	0	0
SKYLT.	26.4	100.7	0	0	0	0	0	0	0	0
DOORS	24.7	3.7	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.4	0.6	276	1203	178	194	845	125	72	314
NET EXPOSED BENT WALL ABOVE GR	3.6	0.5	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	306	383	171	132	165	74	60	75
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	16	43
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	16	40
BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS			0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS			2770		1281		389		749	
SUB TOTAL HT GAIN			2306		732		80		277	
LEVEL FACTOR / MULTIPLIER	0.20	0.32			0.20	0.32		0.20	0.32	
AIR CHANGE HEAT LOSS	883				408		124		239	
AIR CHANGE HEAT GAIN			151		48		5		18	
DUCT LOSS	0		0		0		0		206	
DUCT GAIN			0		0		0		184	
HEAT GAIN PEOPLE	240		2		480		0		240	
HEAT GAIN APPLIANCES/LIGHTS			569		0		569		569	
TOTAL HT LOSS BTU/H			3653		1689		513		988	
TOTAL HT GAIN x 1.3 BTU/H			4857		1016		111		1435	

ROOM USE			LIV			KIT			FAM			WR			FOY			ATTACHED NOTES ARE PART OF REVIEWED DRAWINGS ALL WORK MUST COMPLY WITH OBC CITY OF BRAMPTON BUILDING DIVISION REVIEWED BY: S. DESAI NOV 26 2018				WOB		BAS	
EXP. WALL			46			35			43			0			29							154	31		
CLG. HT.			10			10			10			10			14							9	9		
FACTORS																									
GRS.WALL AREA	LOSS	GAIN	460				350		430		0		406				1386		140						
GLAZING			LOSS	GAIN			LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN			LOSS	GAIN	LOSS	GAIN					
NORTH	20.8	16.5	0	0	0		0	0	0	0	0	0	0	0	0	0	64	1330	990	0	0				
EAST	20.8	41.0	64	1122	2217		0	0	0	0	0	0	5	104	206		0	0	0	0	0				
SOUTH	20.8	24.4	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	3	62				
WEST	20.8	41.0	0	0	0		57	1184	2340	33	686	1356	0	0	0	0		0	0	0	0	0			
SKYLT.	26.4	100.7	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0	0				
DOORS	24.7	3.7	20	493	73		8	197	29	0	0	0	0	0	0		20	493	73	0	0				
NET EXPOSED WALL	4.4	0.6	386	1682	249		285	1242	184	397	1730	256	0	0	0	386	1682	249	1302	5673	841				
NET EXPOSED BENT WALL ABOVE GR	3.6	0.5	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	0	0	0	0	0	0	0	0	0	0	0	0				
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0		30	81	36	10	27	12	0	0	0	0	0	0	0	0	0				
EXPOSED FLOOR	2.6	0.4	351	874	130		0	0	0	0	0	0	10	25	4	0	0	0	0	0	0				
BASEMENT/CRAWL HEAT LOSS			0				0		0			0	0		0						1482				
SLAB ON GRADE HEAT LOSS			0				0		0			0	0		0										
SUBTOTAL HT LOSS			4171				2704		2442			25			2765				2165		2034				
SUB TOTAL HT GAIN			2669				2589		1623			4			600			1904			14				
LEVEL FACTOR / MULTIPLIER	0.30	0.42				0.30	0.42		0.30	0.42		0.30	0.42		0.30	0.42			0.50		0.73				
AIR CHANGE HEAT LOSS	1762						1142		1032			11			1168						8526				
AIR CHANGE HEAT GAIN			176				169		106			0			39						13				
DUCT LOSS			593				0		0			4			393						0				
DUCT GAIN			341				0		0			0			121						0				
HEAT GAIN PEOPLE	240		0				0		0			0		0	0			0	0		0				
HEAT GAIN APPLIANCES/LIGHTS			569				569		569			0		0	569				0		0				
TOTAL HT LOSS BTU/H			6526				3846		3474			39			4326			9680			10560				
TOTAL HT GAIN x 1.3 BTU/H			4875				4325		2988			6			1727			2475			36				

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TOTAL HEAT GAIN BTU/H: 31345

TONS: 2.61

LOSS DUE TO VENTILATION LOAD BTU/H: 1593

STRUCTURAL HEAT LOSS: 53289

TOTAL COMBINED HEAT LOSS BTU/H: 54881

Michael O'Rourke

SITE NAME: MINNISSALE HOMES CORP
 BUILDER: GREENPARK HOMES

TYPE: MILLWOOD 3

DATE: Aug-18

GFA: 2622 LO# 79584

 HEATING CFM 1131 COOLING CFM 1131
 TOTAL HEAT LOSS 53,289 TOTAL HEAT GAIN 31,109
 AIR FLOW RATE CFM 21.22 AIR FLOW RATE CFM 36.36

 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 @ .6" E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	10	7	6
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.

RUN #	1	2	3	4	5	6	7	8	10	11	12	13	14	15	16	18	19	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-4	MBR	ENS-2	LIV	LIV	KIT	KIT	FAM	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH	1.83	1.69	0.51	0.99	2.26	1.73	0.89	1.73	1.83	1.38	3.26	3.26	1.92	1.92	3.47	0.04	4.33	3.37	3.37	3.37	3.37
CFM PER RUN HEAT	39	36	11	21	48	37	19	37	39	29	69	69	41	41	74	1	92	72	72	72	72
RM GAIN MBH	2.28	1.01	0.11	1.44	2.63	1.54	0.27	1.54	2.28	1.24	2.44	2.44	2.16	2.16	2.99	0.01	1.73	0.47	0.47	0.47	0.47
CFM PER RUN COOLING	83	37	4	52	96	56	10	56	83	45	89	89	79	79	109	0	63	17	17	17	17
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.17	0.17	0.15	0.17	0.16	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH	60	35	15	30	41	66	14	70	46	48	45	20	32	25	45	17	47	26	37	46	23
EQUIVALENT LENGTH	130	140	200	130	160	170	160	160	150	180	130	140	150	150	150	120	150	160	140	140	160
TOTAL EFFECTIVE LENGTH	190	175	215	160	201	236	174	230	196	228	175	160	182	175	195	137	197	186	177	186	183
ADJUSTED PRESSURE	0.09	0.1	0.08	0.11	0.08	0.07	0.1	0.07	0.08	0.08	0.09	0.1	0.09	0.1	0.08	0.13	0.08	0.09	0.1	0.09	0.09
ROUND DUCT SIZE	6	4	4	5	6	5	4	5	6	4	6	6	5	5	6	4	6	5	5	5	5
HEATING VELOCITY (ft/min)	199	413	126	154	245	272	218	272	199	333	352	352	301	301	377	11	489	529	529	529	529
COOLING VELOCITY (ft/min)	423	424	46	382	489	411	115	411	423	516	454	454	580	580	556	0	321	125	125	125	125
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10
TRUNK	A	B	B	D	D	C	D	C	B	C	D	D	B	B	A	D	C	B	B	A	D

RUN #	25	26
ROOM NAME	BAS	BAS
RM LOSS MBH	3.37	3.37
CFM PER RUN HEAT	72	72
RM GAIN MBH	0.47	0.47
CFM PER RUN COOLING	17	17
ADJUSTED PRESSURE	0.17	0.17
ACTUAL DUCT LGH	48	31
EQUIVALENT LENGTH	150	160
TOTAL EFFECTIVE LENGTH	198	191
ADJUSTED PRESSURE	0.09	0.09
ROUND DUCT SIZE	5	5
HEATING VELOCITY (ft/min)	529	529
COOLING VELOCITY (ft/min)	125	125
OUTLET GRILL SIZE	3X10	3X10
TRUNK	C	C

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SUPPLY AIR TRUNK SIZE										RETURN AIR TRUNK SIZE									
TRUNK	STATIC	ROUND	RECT	VELOCITY						TRUNK	STATIC	ROUND	RECT	VELOCITY					
CFM	PRESS.	DUCT	DUCT							CFM	PRESS.	DUCT	DUCT						
TRUNK A	185	0.08	7.5	6	X	8	555			TRUNK G	0	0.00	0	0	X	8	0		
TRUNK B	497	0.08	10.8	14	X	8	639			TRUNK H	0	0.00	0	0	X	8	0		
TRUNK C	339	0.07	9.7	12	X	8	509			TRUNK I	0	0.00	0	0	X	8	0		
TRUNK D	638	0.07	12.3	18	X	8	638			TRUNK J	0	0.00	0	0	X	8	0		
TRUNK E	0	0.00	0	0	X	8	0			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	0	0	0	0	0	0	0	0	0	0	0	0	0
AIR VOLUME	75	145	95	155	120	330	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
ACTUAL DUCT LGH	49	59	52	45	42	34	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	225	185	135	180	230	175	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	274	244	187	225	272	209	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.05	0.06	0.06	0.07	0.05	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
ROUND DUCT SIZE	6	7.3	5.8	7.2	7.1	9.6	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
INLET GRILL SIZE	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	14	30	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: MILLWOOD 3
SITE NAME: MINNISALE HOMES CORP

LO # 79584

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES 9.32.3.1(1)	
a) ☒	Direct vent (sealed combustion) only
b) ☐	Positive venting induced draft (except fireplaces)
c) ☐	Natural draft, B-vent or induced draft gas fireplace
d) ☐	Solid Fuel (including fireplaces)
e) ☐	No Combustion Appliances

HEATING SYSTEM	
☒	Forced Air
☐	Non Forced Air
☐	Electric Space Heat

HOUSE TYPE 9.32.1(2)	
☒	I Type a) or b) appliance only, no solid fuel
☐	II Type I except with solid fuel (including fireplaces)
☐	III Any Type c) appliance
☐	IV Type I, or II with electric space heat
☐	Other: Type I, II or IV no forced air

SYSTEM DESIGN OPTIONS O.N.H.W.P.	
☐	1 Exhaust only/Forced Air System
☐	2 HRV with Ducting/Forced Air System
☒	3 HRV Simplified/connected to forced air system
☐	4 HRV with Ducting/Non forced air system
☐	Part 6 Design

TOTAL VENTILATION CAPACITY 9.32.3.3(1)			
Basement + Master Bedroom	2 *	@ 21.2 cfm	42.4 cfm
Other Bedrooms	3 *	@ 10.6 cfm	31.8 cfm
Kitchen & Bathrooms	5	@ 10.6 cfm	53 cfm
Other Rooms	4	@ 10.6 cfm	42.4 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 1.06	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
ENS-2	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:	<i>Michael O'Rourke</i>
HRAJ #	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, 3.2.5 OF THE BUILDING CODE.
INDIVIDUAL BCIN: 19669 *Michael O'Rourke* MICHAEL O'ROURKE

**CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. DESAI
NOV 26 2018**

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

LO#: 79584

Model: MILLWOOD 3

Builder: GREENPARK HOMES

Date: 8/9/2018

Volume Calculation
House Volume

Level	Floor Area (ft ²)	Floor Height (ft)	Volume (ft ³)
Bsmt	962	9	8658
First	1332	10	13320
Second	1290	9	11610
Third	0	9	0
Fourth	0	9	0
Total:			33,588.0 ft ³
Total:			951.1 m ³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.382
SUMMER NATURAL AIR CHANGE RATE	0.124

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

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

$$0.382 \times 264.20 \times 41^\circ\text{C} \times 1.2 = 4997 \text{ W}$$

$$= 17051 \text{ Btu/h}$$

6.2.6 Sensible Gain due to Air Leakage

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

$$= 0.124 \times 264.20 \times 6^\circ\text{C} \times 1.2 = 241 \text{ W}$$

$$= 821 \text{ Btu/h}$$

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

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

6.2.7 Sensible heat Gain due to Ventilation

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

$$80 \text{ CFM} \times 11^\circ\text{F} \times 1.08 \times 0.25 = 236 \text{ Btu/h}$$

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

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

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 / HLlevel)
1	0.5	17,051	11,715	0.728
2	0.3		12,067	0.424
3	0.2		10,699	0.319
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

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: MILLWOOD 3

SFQT: 2622

LO# 79584

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:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	33588.0	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:	4.5 ft
LENGTH: 47.0 ft	WIDTH: 31.0 ft	EXPOSED PERIMETER:	31.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	125.0 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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Compliance Package A1

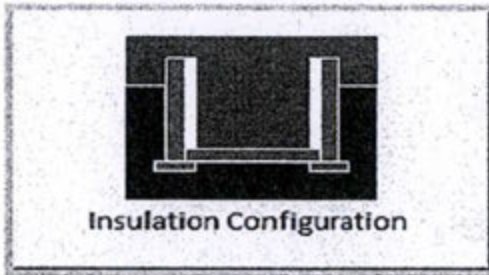
Nominal	Min. Eff.
60	59.22
31	27.65
31	29.80
22	17.03
20 ci	21.12
-	-
10	10
10	11.13
0.28	-
0.49	-
0.96	-
75%	-
0.8	-

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

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):	17.4	 Insulation Configuration
Floor Width (m):	9.4	
Exposed Perimeter (m):	9.4	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.28	
Window Area (m ²):	0.3	
Door Area (m ²):	0.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	434	

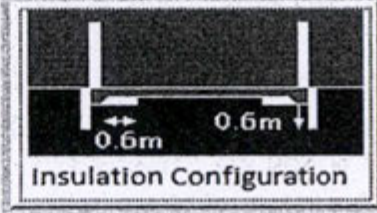
CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. DESAI

NOV 26 2018

ATTACHED NOTES ARE PART
OF REVIEWED DRAWINGS
ALL WORK MUST COMPLY WITH OBCTYPE: MILLWOOD 3
LO# 79584

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		
Length (m):	14.3	
Width (m):	9.4	
Exposed Perimeter (m):	38.1	
Radiant Slab		
Heated Fraction of the Slab:	0	CITY OF BRAMPTON BUILDING DIVISION REVIEWED BY: S. DESAI NOV 26 2018 ATTACHED NOTES ARE PART OF REVIEWED DRAWINGS ALL WORK MUST COMPLY WITH OBC
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):	640	

TYPE: MILLWOOD 3

LO# 79584

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):	8.53		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	951.1		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1267.9 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):	0.382		
Cooling Air Leakage Rate (ACH/H):	0.124		

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. DESAI

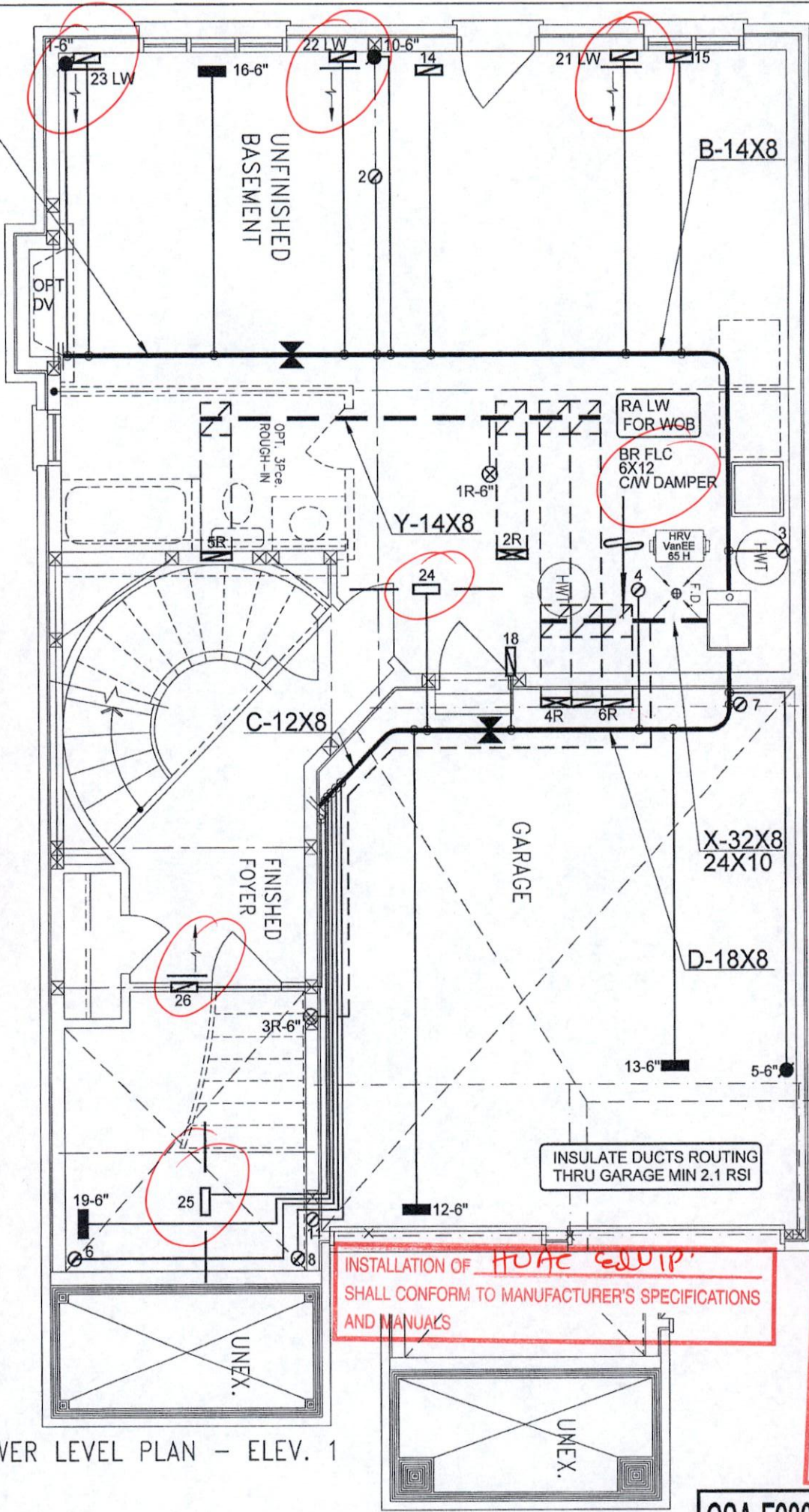
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ALL WORK MUST COMPLY WITH OBCTYPE: MILLWOOD 3
LO# 79584

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 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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NOV 26 2018
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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.



LOWER LEVEL PLAN - ELEV. 1

LOWER LEVEL PLAN - ELEV. 2

CSA-F280-12
PACKAGE A1

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.

HVAC LEGEND						3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.
	FLOOR SUPPLY AIR GRILLE		6" 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.
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	Description
								Date
								REVISIONS

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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	HEAT LOSS 54881 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title	
Project Name GREENPARK HOMES MINNISALE HOMES CORP. BRAMPTON, ONTARIO			MAKE GOODMAN	3RD FLOOR				BASEMENT HEATING LAYOUT	
			MODEL GMEC960803BNA-60	2ND FLOOR		10	4		2
			INPUT 60 MBTUH	1ST FLOOR		7	2		2
		OUTPUT 57.6 MBTUH	BASEMENT		6	1	0	Date AUG/2018	
		COOLING 2.5 TONS	ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5'0" UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A					Scale 3/16" = 1'-0"	
		FAN SPEED 1131 cfm @ 0.5" w.c.						BCIN# 19669	
MILLWOOD 3 2622 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.					LO# 79584		

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(1) 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.

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. DESAI

NOV 26 2018

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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, 9.32.4 REQUIREMENTS.

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

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.

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, BCI# 19669
HVAC DESIGNS LTD.

MAIN LEVEL PLAN - ELEV. 2

MAIN LEVEL PLAN - ELEV. 1

HVAC LEGEND							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FLOOR SUPPLY AIR GRILLE		8" SUPPLY AIR BOOT ABOVE		14"X8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	FLOOR SUPPLY AIR GRILLE 8" BOOT		30"X8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR		REDUCER
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA FLOOR RETURN AIR GRILLE		

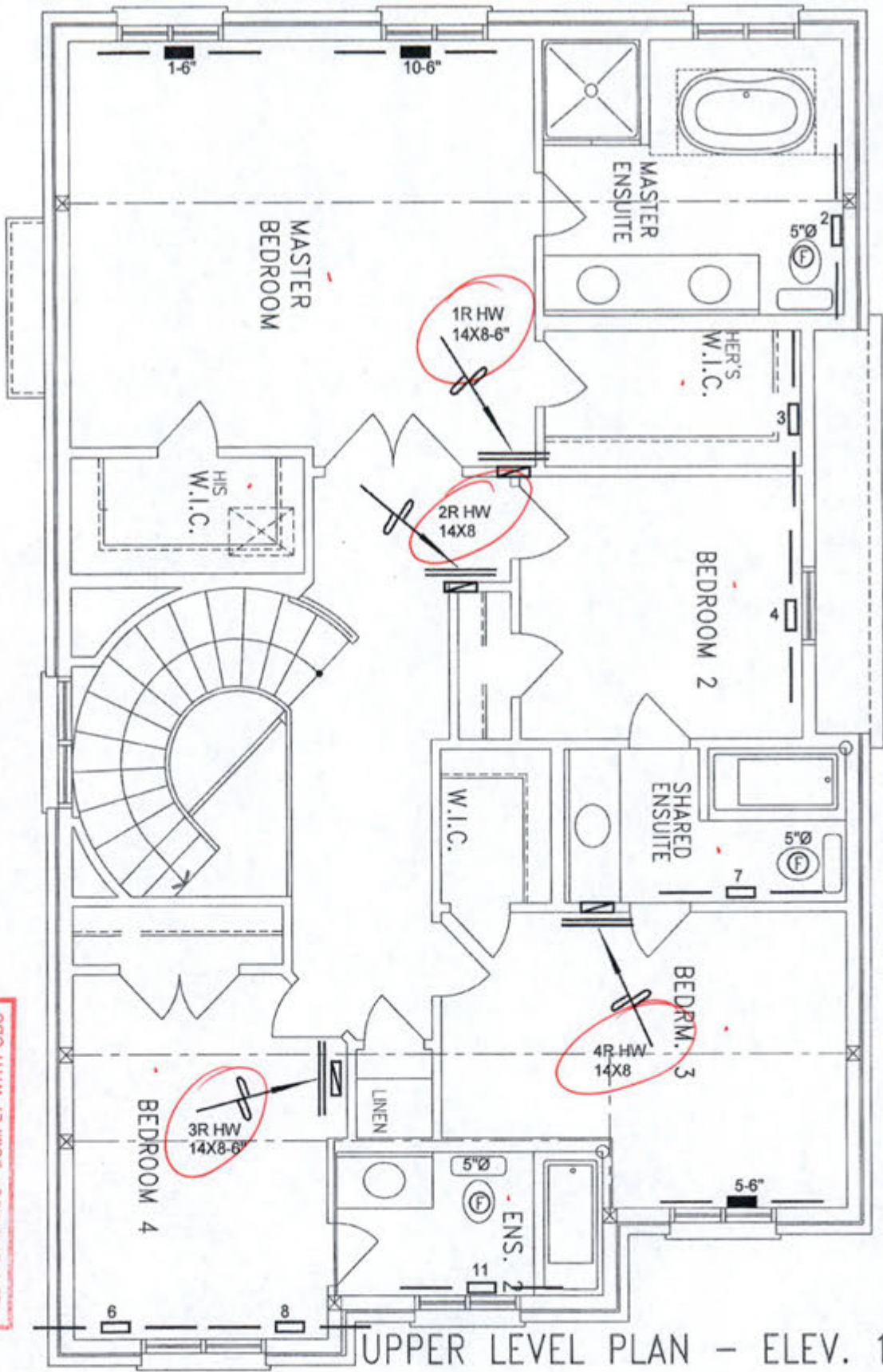
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Client GREENPARK HOMES		HVACDESIGNS LTD. 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name MINNISALE HOMES CORP. BRAMPTON, ONTARIO			Date AUG/2018	
MILLWOOD 3		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.	Scale 3/16" = 1'-0"	
2622 sqft			BCIN# 19669	
				LO# 79584

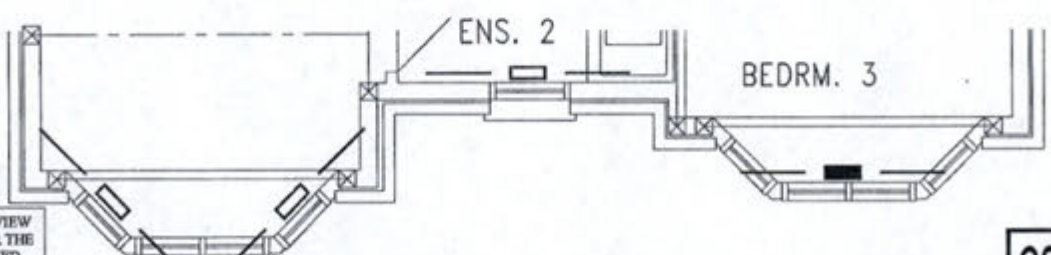
THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH OBC DIV. B, 9.33.4 REQUIREMENTS.

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

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. DESAI
NOV 26 2018
ATTACHED NOTES ARE PART
OF REVISED DRAWINGS
ALL WORK MUST COMPLY WITH OBC



UPPER LEVEL PLAN - ELEV. 1



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

CSA-F280-12
PACKAGE A1

HVAC LEGEND						REVISIONS		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Description	Date
	FLOOR SUPPLY AIR GRILLE		4" SUPPLY AIR BOOT ABOVE		14" RETURN AIR GRILLE	3.		
	FLOOR SUPPLY AIR GRILLE 6" BOOT		30" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	2.		
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		RETURN AIR STACK 2nd FLOOR	1.		
			FRA-FLOOR RETURN AIR GRILLE		REDUCER			

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Client GREENPARK HOMES		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	Sheet Title SECOND FLOOR HEATING LAYOUT	
Project Name MINNISALE HOMES CORP. BRAMPTON, ONTARIO			Date AUG/2018	Scale 3/16" = 1'-0"
MILLWOOD 3 2622 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# 79584