

SITE NAME: MNMISSALE HOMES CORP		LOT 19		DATE: Nov-18		WINTER NATURAL AIR CHANGE RATE 0.335		HEAT LOSS ΔT °F. 74		CSA-F280-12			
BUILDER: GREENPARK HOMES		TYPE: SANDSTONE 1A		GFA: 2824		LO# 79589		SUMMER NATURAL AIR CHANGE RATE 0.169		HEAT GAIN ΔT °F. 11		SB-12 PACKAGE A1	
ROOM USE		MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH			ENS-2		
EXP. WALL		34	27	7	11	32	16	7			10		
CLG. HT.		9	9	9	9	9	9	9			9		
FACTORS		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN	
GRS.WALL AREA		308	243	83	89	288	144	63			90		
GLAZING		LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN			LOSS GAIN		
NORTH	20.8 15.8	0 0 0	0 0 0	0 0 0	16 332 248	0 0 0	0 0 0	6 126 93			0 0 0		
EAST	20.8 41.0	36 748 1478	14 291 576	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0			0 0 0		
SOUTH	20.8 24.4	0 0 0	7 145 171	0 0 0	0 0 0	0 0 0	16 332 380	0 0 0			16 332 380		
WEST	20.8 41.0	0 0 0	0 0 0	9 187 369	0 0 0	26 540 1067	0 0 0	0 0 0			0 0 0		
SKYL.T.	26.4 100.7	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0			0 0 0		
DOORS	24.7 3.7	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0			0 0 0		
NET EXPOSED WALL	4.4 0.6	270 1176 174	222 967 143	64 236 36	83 262 54	262 1142 169	128 608 83	57 248 37			74 322 48		
NET EXPOSED BMT WALL ABOVE GR	3.8 0.6	0 0 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	288 387 189	170 213 96	84 105 47	187 234 104	176 221 98	272 341 162	140 176 78			160 238 108		
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 0 0		
EXPOSED FLOOR	2.8 0.4	0 0 0	0 0 0	84 209 31	0 0 0	178 438 85	0 0 0	80 199 30			0 0 0		
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		2281	1617	737	928	2349	1231	748			893		
SUB TOTAL HT GAIN			1811	884	482	405	1400	626			237		544
LEVEL FACTOR / MULTIPLIER	0.20 0.32	0.20 0.32	0.20 0.32	0.20 0.32	0.20 0.32	0.20 0.32	0.20 0.32	0.20 0.32			0.20 0.32		
AIR CHANGE HEAT LOSS		723	513	234	294	742	380	237			263		
AIR CHANGE HEAT GAIN			111	60	30	25	86	38				33	
DUCT LOSS		0	0	97	0	308	0	98			0		
DUCT GAIN		0	0	51	0	259	0	25			0		
HEAT GAIN PEOPLE	240	2	480	0	0	1	240	1	240	0	0		
HEAT GAIN APPLIANCES/LIGHTS			891	0	0	891	891	891			0		
TOTAL HT LOSS BTUH		3005	2129	1067	1223	3391	1621	1083			1178		
TOTAL HT GAIN x 1.3 BTUH			4228	1367	732	1978	3685	2281	360		781		

ROOM USE	LIV			KTIFM			LAUN			W/R			FOY			WUB			BAS					
EXP. WALL	30			71			24			8			74			46			124					
CLG. HT.	10			10			12			10			10			9			9					
FACTORS		LOSS		GAIN		LOSS		GAIN		LOSS		GAIN		LOSS		GAIN		LOSS		GAIN				
GRS.WALL AREA	300		710		288		80		740		414		620											
GLAZING	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	0	0	0	0				
EAST	20.8	41.0	0	0	0	87	1808	3571	0	0	0	0	0	0	0	0	0	0	0	0				
SOUTH	20.8	24.4	40	831	978	0	0	0	0	0	0	0	0	0	0	0	0	6	125	146				
WEST	20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
SKYL.T.	26.4	100.7	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	0	0	0	0	0	0	0	0	0	0	0	0				
NET EXPOSED WALL	4.4	0.6	260	1133	168	623	2714	402	261	1137	169	80	349	52	513	2571	306	388	1691	251	0	0	0	
NET EXPOSED BMT WALL ABOVE GR	3.8	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	488	1743	268	
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	104	130	85	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	
EXPOSED FLOOR	2.8	0.4	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			4728		
SLAB ON GRADE HEAT LOSS	0			0			0			0			0			0			0			647		
SUBTOTAL HT LOSS	1964			4622			1776			349			5595			2966			7089			478		
SUB TOTAL HT GAIN	1144			3974			350			52			4171			570			8542			84		
LEVEL FACTOR / MULTIPLIER	0.30	0.36	0.30	0.36	0.30	0.36	0.30	0.36	0.30	0.36	0.30	0.36	0.30	0.36	0.30	0.36	0.30	0.36	0.30	0.36	0.30	0.36	0.30	0.36
AIR CHANGE HEAT LOSS	709			1632			641			126			2019			287			0			0		
AIR CHANGE HEAT GAIN	78			244			22			3			0			0			0			0		
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	0	0	0	0	0	0	0	0	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS	851			851			851			851			851			851			0			0		
TOTAL HT LOSS BTUH	2672			6103			2416			474			7613			2966			15630			705		
TOTAL HT GAIN x 1.3 BTUH	2686			6590			1690			1178			8766			741			705			705		

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. DESAI
JAN 23 2019

ATTACHED NOTES ARE PART
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TOTAL HEAT GAIN BTUH: 34888 TONS: 2.90 LOSS DUE TO VENTILATION LOAD BTUH: 1893 STRUCTURAL HEAT LOSS: 82811 TOTAL COMBINED HEAT LOSS BTUH: 84204

SITE NAME: MINNISSALE HOMES CORP
 BUILDER: GREENPARK HOMES

 LOT 19
 TYPE: SANDSTONE 1A

DATE: Nov-18

GFA: 2834

LO# 79589

 HEATING CFM 1131 COOLING CFM 1131
 TOTAL HEAT LOSS 52,611 TOTAL HEAT GAIN 34,619
 AIR FLOW RATE CFM 21.5 AIR FLOW RATE CFM 32.67

 furnace pressure 0.8
 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 @ 8" E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	10	8	5
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	9	10	11	12	13	14	15	17	18	19	21	22	23	24
ROOM NAME	ENS	MBR	WIC	BED-3	BED-4	ENS-2	BATH	BED-2	BED-3	MGR	FOY	LIV	KT/FM	KT/FM	KT/FM	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH	2.13	1.50	1.07	1.70	1.62	1.18	1.08	1.22	1.70	1.50	3.81	2.67	2.05	2.05	2.05	2.42	0.47	3.81	3.72	3.72	3.72	3.72
CFM PER RUN HEAT	46	32	23	36	35	25	23	26	36	32	82	57	44	44	44	52	10	82	80	80	80	80
RM GAIN MBH	1.36	2.11	0.73	1.84	2.28	0.75	0.36	1.98	1.84	2.11	2.88	2.69	2.20	2.20	2.20	1.59	1.18	2.88	0.29	0.29	0.29	0.29
CFM PER RUN COOLING	44	69	24	60	75	25	12	85	60	69	94	88	72	72	72	52	38	94	9	9	9	9
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH	48	51	42	35	37	43	30	41	45	37	43	22	45	26	22	33	11	25	28	31	15	31
EQUIVALENT LENGTH	140	160	160	160	150	150	170	130	160	170	150	160	150	180	190	150	190	150	150	160	190	160
TOTAL EFFECTIVE LENGTH	188	211	202	195	187	193	200	171	205	207	193	182	195	188	212	183	201	175	178	191	205	191
ADJUSTED PRESSURE	0.09	0.08	0.09	0.09	0.09	0.09	0.09	0.1	0.08	0.08	0.08	0.09	0.09	0.09	0.08	0.09	0.09	0.09	0.1	0.09	0.08	0.09
ROUND DUCT SIZE	4	5	4	5	5	4	4	5	5	5	6	6	5	5	5	4	4	6	5	5	5	5
HEATING VELOCITY (ft/min)	528	235	264	264	257	287	284	191	264	235	418	291	323	323	323	597	115	418	587	587	587	587
COOLING VELOCITY (ft/min)	505	507	275	441	551	287	138	477	441	507	479	449	529	529	529	597	436	479	66	66	66	66
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10
TRUNK	C	B	F	F	F	B	F	C	F	B	E	F	B	C	B	C	F	E	C	B	F	E

RUN #	25
ROOM NAME	BAS
RM LOSS MBH	3.72
CFM PER RUN HEAT	80
RM GAIN MBH	0.29
CFM PER RUN COOLING	9
ADJUSTED PRESSURE	0.17
ACTUAL DUCT LGH	54
EQUIVALENT LENGTH	150
TOTAL EFFECTIVE LENGTH	204
ADJUSTED PRESSURE	0.08
ROUND DUCT SIZE	6
HEATING VELOCITY (ft/min)	408
COOLING VELOCITY (ft/min)	46
OUTLET GRILL SIZE	4X10
TRUNK	B

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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	0	0.00	0	0	8	0	0.00	0	0
TRUNK B	337	0.08	9.3	10	8	0	0.00	0	0
TRUNK C	248	0.09	8.1	8	8	0	0.00	0	0
TRUNK D	585	0.08	11.5	16	8	0	0.00	0	0
TRUNK E	244	0.08	8.3	8	8	0	0.00	0	0
TRUNK F	544	0.08	11.2	14	8	0	0.00	0	0
TRUNK G	0	0.00	0	0	8	0	0.00	0	0
TRUNK H	0	0.00	0	0	8	0	0.00	0	0
TRUNK I	0	0.00	0	0	8	0	0.00	0	0
TRUNK J	0	0.00	0	0	8	0	0.00	0	0
TRUNK K	0	0.00	0	0	8	0	0.00	0	0
TRUNK L	0	0.00	0	0	8	0	0.00	0	0

RETURN 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 O	0	0.06	0	0	8	0	0.06	0	0
TRUNK P	0	0.06	0	0	8	0	0.06	0	0
TRUNK Q	0	0.06	0	0	8	0	0.06	0	0
TRUNK R	0	0.06	0	0	8	0	0.06	0	0
TRUNK S	0	0.06	0	0	8	0	0.06	0	0
TRUNK T	0	0.06	0	0	8	0	0.06	0	0
TRUNK U	0	0.06	0	0	8	0	0.06	0	0
TRUNK V	0	0.06	0	0	8	0	0.06	0	0
TRUNK W	0	0.06	0	0	8	0	0.06	0	0
TRUNK X	1131	0.06	15.8	30	8	0	0.06	0	0
TRUNK Y	610	0.06	12.5	18	8	0	0.06	0	0
TRUNK Z	0	0.06	0	0	8	0	0.06	0	0
DROP	1131	0.06	15.8	24	10	0	0.06	0	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	160	155	95	95	155	300	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	52	46	36	50	40	45	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	150	150	175	175	210	205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	202	198	211	225	250	250	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.07	0.08	0.07	0.07	0.08	0.08	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	7.3	7	6	6	7.5	9.6	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	14	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: SANDSTONE 1A
SITE NAME: MINNISSALE HOMES CORP

LO # 79589
LOT 19

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)
Besement + 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	74 F	1.08	0.25

SUPPLEMENTAL FANS		PANASONIC	
Location	Model	cfm	HVI
ENS	FV-05-11VK1	50	☒
BATH	FV-05-11VK1	50	☒
ENS-2	FV-05-11VK1	50	☒
W/R	FV-05-11VK1	50	☒

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
155 cfm high	64 cfm low	
75 % Sensible Efficiency	☒ HVI Approved	
@ 32 deg F (0 deg C)		

LOCATION OF INSTALLATION	
Lot:	Concession
Township:	Plan:
Address	
Roll #	Building Permit #

BUILDER:		GREENPARK HOMES
Name:		
Address:		
City:		
Telephone #:		
CITY OF BRAMPTON BUILDING DIVISION REVIEWED BY: S. DESAI JAN 23 2019		
ATTACHED NOTES ARE PART OF REVIEWED DRAWINGS ALL WORK MUST COMPLY WITH OBC		
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>
HRAI #	001820
Date:	November-18

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

LO#: 79589

Model: SANDSTONE 1A

Builder: GREENPARK HOMES

Date: 11/9/2018

Volume Calculation
House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1294	9	11646
First	1294	10	12940
Second	1540	9	13860
Third	0	9	0
Fourth	0	9	0
Total:			38,446.0 ft³
Total:			1088.7 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.335
SUMMER NATURAL AIR CHANGE RATE	0.109

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

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

$$0.335 \times 302.41 \times 41^\circ\text{C} \times 1.2 = 5007 \text{ W}$$

$$= 17084 \text{ Btu/h}$$

6.2.6 Sensible Gain due to Air Leakage

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

$$0.109 \times 302.41 \times 6^\circ\text{C} \times 1.2 = 241 \text{ W}$$

$$= 823 \text{ Btu/h}$$

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

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

6.2.7 Sensible heat Gain due to Ventilation

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

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

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

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

Level	Level Factor (LF)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{level})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HL _{level})
1	0.5	17,084	10,044	0.850
2	0.3		14,205	0.361
3	0.2		10,775	0.317
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

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. DESAI

JAN 23 2019

ATTACHED NOTES ARE PART
OF REVIEWED DRAWINGS
ALL WORK MUST COMPLY WITH OBC

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	SANDSTONE 1A	LOT 19	BUILDER:	GREENPARK HOMES
SFQT:	2834	LO#	79589	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:	WEST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	38446.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.65	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	5.0 ft
LENGTH:	49.0 ft	WIDTH:	36.0 ft
		EXPOSED PERIMETER:	124.0 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	

ATTACHED NOTES ARE PART
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JAN 23 2019
CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. DESAI

**Compliance Package
A1**

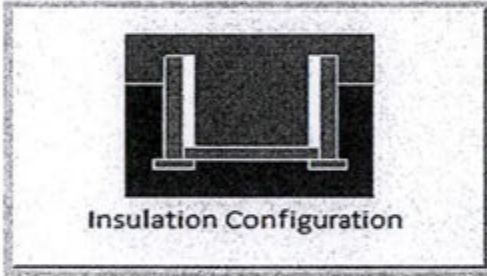
Nominal	Min. Eff.
60	59.22
31	27.65
31	29.80
22	17.03
20 ci	21.12
-	-
10	10
10	11.13
0.28	-
0.49	-
0.96	-
75%	-
0.8	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

Michael O'Rourke

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

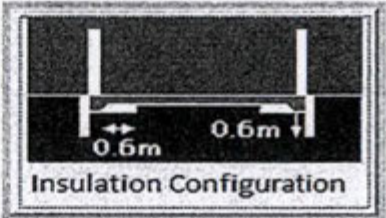
Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	14.9	 Insulation Configuration
Floor Width (m):	11.0	
Exposed Perimeter (m):	37.8	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.52	
Window Area (m ²):	1.1	
Door Area (m ²):	3.7	
Radiant Slab		
Heated Fraction of the Slab:	0	ATTACHED NOTES ARE PART OF REVIEWED DRAWINGS ALL WORK MUST COMPLY WITH OBC JAN 23 2019 REVIEWED BY: S. DESAI CITY OF BRAMPTON BUILDING DIVISION
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	1385	

TYPE: SANDSTONE 1A
LO# 79589

LOT 19

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):	1.5	 Insulation Configuration
Width (m):	11.0	
Exposed Perimeter (m):	14.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		190

TYPE: SANDSTONE 1A
LO# 79589

LOT 19



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):	7.01			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1088.7			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa. 3.57	1451.2 cm ² ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply 37.5	Total Exhaust 37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.335			
Cooling Air Leakage Rate (ACH/H):	0.109			

TYPE: SANDSTONE 1A
LO# 79589

LOT 19



UNFINISHED BASEMENT

Y-18X8

D-16X8

X-30X8
24X10

F-14X8

E-8X8

B-10X8

BR FLC
5X10
CW DAMPER
RA LW FOR
WUB PLAN

JRV Fan Coil
65 H

21

22

23

24

25 LW

13

14

15

17

18

19

20

2

5R

6R

7

8

9

4R-6"

5

11-6"

12-6"

19-6"

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. DESAI

PERFORMANCE OF BLDG ENVELOPE AND EQUIPMENT
3.1.1.2 TABLES REQUIREMENTS.
WITH BRUSHLESS DIRECT CURRENT MOTOR OBC DIV
UNCONDITIONED SPACE or OUTDOORS PER OBC DIV
AL ALL SUPPLY DUCTS LOCATED IN CONDITIONED
OBC DIV B6.2.4.3(12) REQUIREMENTS.
A BUILDING ENVELOPE PENETRATIONS THAT ARE
MINANTS (GAS VENTS, OIL FILL PIPES, etc. BY MIN
2.3.12.
AUST DUCT LARGER THAN 6" dia SHALL BE PRECEDED
N OF DESIGN PER OBC PART 6 REQUIREMENTS.
E DIRECTLY TO OUTSIDE. CLOTHES DRYER EXHAUST
OBC DIV B 9.32.1.2, 9.32.1.3 & 9.32.3 REQ'S. BALANCE
UPPER FLOOR TO MATCH THE SUPPLY.
L EXHAUST FAN, THE CONTROLLER SHALL BE WIRED
CONNECTED TO THE FURNACE FAN. THE FURNACE

ENSURE THAT MIN THERMAL PERFORMANCE OF BLDG ENVELOPE AND EQUIPMENT SHALL CONFORM TO OBC SB-12, 3.1.1.2 TABLES REQUIREMENTS.

FURNACE SHALL BE EQUIPPED WITH BRUSHLESS DIRECT CURRENT MOTOR OBC DIV B 12.3.1.5.

SEAL ALL DUCTWORK WITHIN UNCONDITIONED SPACE or OUTDOORS PER OBC DIV B6.2.4.3(11) REQUIREMENTS. SEAL ALL SUPPLY DUCTS LOCATED IN CONDITIONED SPACE IN COMPLIANCE WITH OBC DIV B6.2.4.3(12) REQUIREMENTS.

SEPARATE ANY INTAKES FROM BUILDING ENVELOPE PENETRATIONS THAT ARE POTENTIAL SOURCES OF CONTAMINANTS (GAS VENTS, OIL FILL PIPES, etc.) BY MIN 900mm (2FT 11IN) - OBC Div B 9.32.3.12.

INSTALLATION OF KITCHEN EXHAUST DUCT LARGER THAN 6" dia SHALL BE PRECEDED BY APPLICATION FOR REVISION OF DESIGN PER OBC PART 6 REQUIREMENTS.

EXHAUST FAN SHALL DISCHARGE DIRECTLY TO OUTSIDE. CLOTHES DRYER EXHAUST SYSTEM SHALL COMPLY WITH OBC DIV B 9.32.1.2, 9.32.1.3 & 9.32.3 REQ'S. BALANCE THE RETURN AIRFLOW ON THE UPPER FLOOR TO MATCH THE SUPPLY.

WHEN HRV IS USED AS PRINCIPAL EXHAUST FAN, THE CONTROLLER SHALL BE WIRED TO THE HRV UNIT AND INTERCONNECTED TO THE FURNACE FAN. THE FURNACE BLOWER MUST BE IN OPERATION WHEN THE HRV IS IN OPERATION.

INSTALL ADDITIONAL S/A REGISTER AS REQUIRED IN ORDER TO ENSURE MIN 72degF - OBC DIV B 9.33.3.1(1).

UNDERCUT BY MIN 1" THE DOOR TO ANY ROOM WITHOUT RETURN AIR GRILLE.

ENSURE RETURN AIR INTAKE SHALL BE CONNECTED TO THE MAIN R/A DUCT AT A HORIZONTAL DISTANCE OF MIN 6FT FROM THE CASING OF THE UNIT (HRAI DIGEST).

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. DESAI
JAN 23 2019 59
ATTACHED NOTES ARE PART
OF REVIEWED DRAWINGS
ALL WORK MUST COMPLY WITH OBC

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, B.S. 1969
HVAC DESIGNS LTD.

LOT 19
CSA-F280-12
PACKAGE A1

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.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

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Client
GREENPARK HOMES
Project Name
MINNISALE HOMES CORP BRAMPTON, ONTARIO
LOT 19 SANDSTONE 1A 2834 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 54204 BTU/H		# OF RUNS S/A R/A FANS		
UNIT DATA				
MAKE	GOODMAN	3RD FLOOR		
MODEL		2ND FLOOR	10	4
GMEC960603BNA		1ST FLOOR	8	2
INPUT	60 MBTUH	BASEMENT	5	1
OUTPUT	57.6 MBTUH	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		
COOLING	3.0 TONS			
FAN SPEED	1131 cfm @ 0.5" w.e.			

BASEMENT HEATING LAYOUT

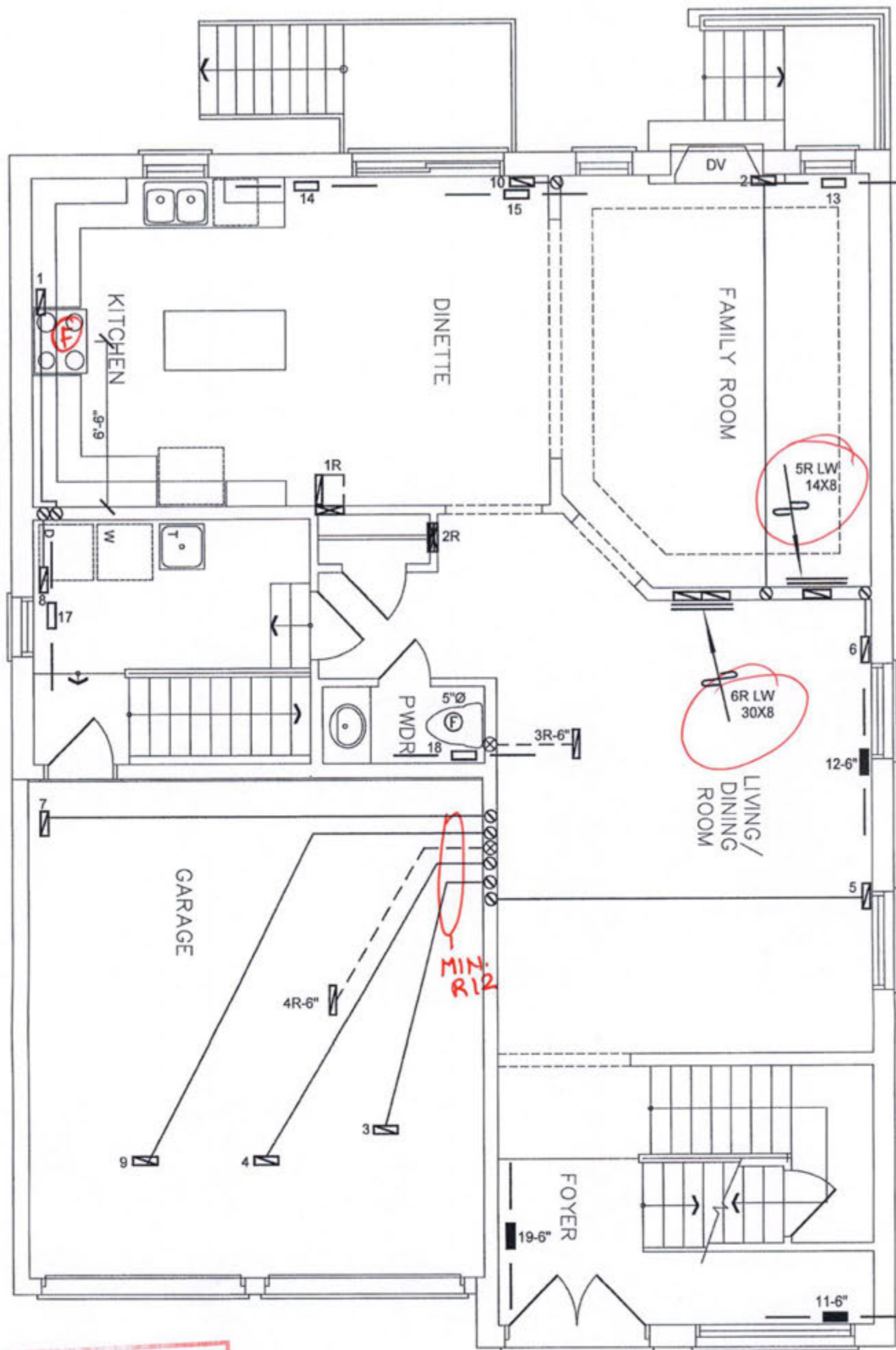
Date NOV/2018

Scale 3/16" = 1'-0"

BCIN# 19669

LO#	00712
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LO#	80712
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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.

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

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. DESAI

JAN 23 2019

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LOT 19

CSA-F280-12

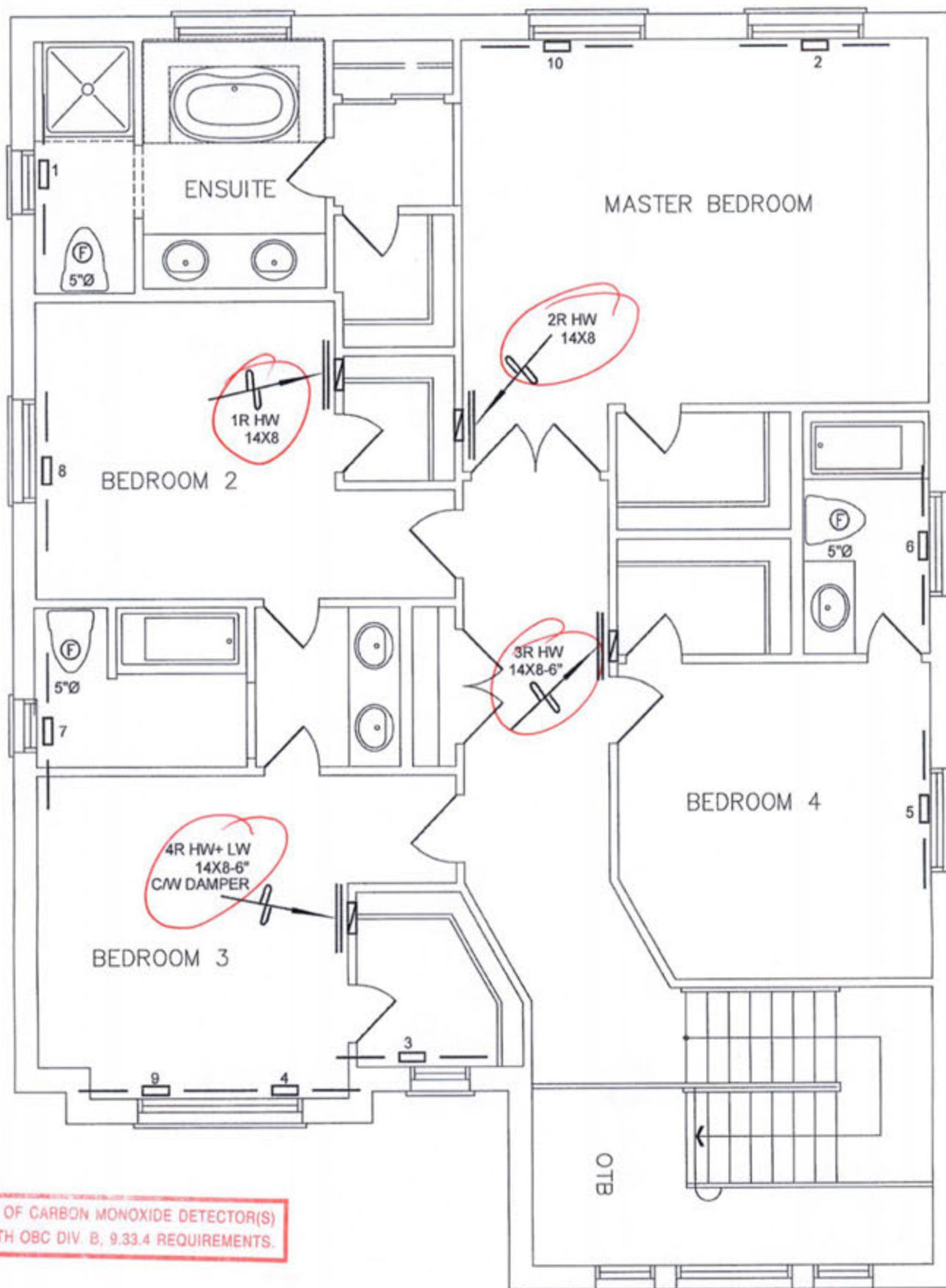
WUB PACKAGE A1

I MICHAEL OROURKE 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, 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"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 Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.	Sheet Title	
GREENPARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	NOV/2018
MINNISALE HOMES CORP BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
LOT 19 SANDSTONE 1A 2834 sqft			BCIN# 19669	
		LO#	80712	



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 BY: S. DESAI
JAN 23 2019
ATTACHED NOTES ARE PART
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LOT 19

CSA-F280-12

WUB 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, BSCM 1969
HVAC DESIGNS LTD.

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

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GREENPARK HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	NOV/2018
MINNISALE HOMES CORP BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
LOT 19 SANDSTONE 1A 2834 sqft			BCIN# 19669	
		LO#	80712	