

SITE NAME: MINNISALE HOMES CORP
BUILDER: GREENPARK HOMES

OPT 4 BED LOT 26
TYPE: MILLWOOD 1

GFA: 2194

DATE: Nov-18
LOF 80606

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	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH						
EXP. WALL	29	7	10	38	26	26	6						
CLG. HT.	10	9	9	9	9	10	9						
FACTORS													
GRS.WALL AREA	290	63	90	342	234	290	54						
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN						
NORTH	20.8 16.6 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0						
EAST	20.8 41.0 32 695 1314	0 0 0	0 0 0	16 332 657	0 0 0	0 0 0	0 0 0						
SOUTH	20.8 24.4 0 0 0	0 0 0	0 0 0	0 0 0	18 374 439	0 0 0	0 0 0						
WEST	20.8 41.0 0 0 0	0 0 0	10 208 410	0 0 0	20 416 821	46 356 1888	0 0 0						
SKYL.T.	36.4 100.7 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0						
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						
NET EXPOSED WALL	4.4 0.6 258 1124 167	63 274 41	80 349 52	326 1420 211	196 854 127	214 932 138	54 235 35						
NET EXPOSED BMT WALL ABOVE GR	3.5 0.5 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0						
EXPOSED CLG	1.3 0.6 206 261 116	133 167 74	35 44 20	352 441 196	168 210 94	120 150 67	78 98 43						
NO ATTIC EXPOSED CLG	2.7 1.2 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	30 81 36	0 0 0						
EXPOSED FLOOR	2.8 0.4 0 0 0	0 0 0	35 87 13	0 0 0	154 383 57	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	2060	441	687	2194	2237	2119	333						
SUB TOTAL HT GAIN		1596	115	495	1063	1537	2129	78					
LEVEL FACTOR / MULTIPLIER	0.20 0.29	0.20 0.29	0.20 0.29	0.20 0.29	0.20 0.29	0.20 0.29	0.20 0.29						
AIR CHANGE HEAT LOSS	596	128	200	638	651	616	97						
AIR CHANGE HEAT GAIN		110	8	34	73	106	147	5					
DUCT LOSS	0	0	89	0	289	0	0						
DUCT GAIN	0	0	53	0	270	0	0						
HEAT GAIN PEOPLE	240	2	480	0	1	240	1	240	0				
HEAT GAIN APPLIANCES/LIGHTS		819	0	0	619	819	819	0					
TOTAL HT LOSS BTU/H	2646	569	976	2832	3177	2735	430						
TOTAL HT GAIN x 1.3 BTU/H	3967	160	756	2855	3864	4336	109						

ROOM USE	LVID	KT/PM	LAUN	WVR	FOY								
EXP. WALL	37	68	0	29	20								
CLG. HT.	10	10	9	11	11								
FACTORS													
GRS.WALL AREA	370	680	0	319	220								
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								
EAST	20.8 41.0 0 0 0	80 1662 3284	0 0 0	0 0 0	0 0 0								
SOUTH	20.8 24.4 0 0 0	0 0 0	0 0 0	8 166 195	0 0 0								
WEST	20.8 41.0 27 501 1108	0 0 0	0 0 0	0 0 0	6 125 246								
SKYL.T.	36.4 100.7 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	20 493 73	40 986 146								
NET EXPOSED WALL	4.4 0.6 343 1494 222	600 2614 388	0 0 0	291 1268 188	174 768 112								
NET EXPOSED BMT WALL ABOVE GR	3.5 0.5 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	84 105 47	0 0 0	0 0 0								
NO ATTIC EXPOSED CLG	2.7 1.2 0 0 0	10 27 12	0 0 0	0 0 0	50 134 60								
EXPOSED FLOOR	2.8 0.4 0 0 0	0 0 0	77 192 28	0 0 0	0 0 0								
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0								
SLAB ON GRADE HEAT LOSS	0	0	0	0	0								
SUBTOTAL HT LOSS	2065	4303	297	1927	2003								
SUB TOTAL HT GAIN		1330	75	458	565								
LEVEL FACTOR / MULTIPLIER	0.30 0.44	0.30 0.44	0.20 0.29	0.30 0.44	0.30 0.44								
AIR CHANGE HEAT LOSS	903	1890	86	848	880								
AIR CHANGE HEAT GAIN		92	254	5	31								
DUCT LOSS	0	0	35	0	0								
DUCT GAIN	0	0	90	0	0								
HEAT GAIN PEOPLE	240	0	0	0	0								
HEAT GAIN APPLIANCES/LIGHTS		819	0	819	0								
TOTAL HT LOSS BTU/H	2958	6193	422	2773	2883								
TOTAL HT GAIN x 1.3 BTU/H	2913	6183	1287	634	784								

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

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JAN 24 2019

TOTAL HEAT GAIN BTU/H:

29169

TONS: 2.43

LOSS DUE TO VENTILATION LOAD BTU/H: 1593

STRUCTURAL HEAT LOSS: 42405

TOTAL COMBINED HEAT LOSS BTU/H: 43997

SITE NAME: MINNISSALE HOMES CORP
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OPT 4 BED LOT 26
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DATE: Nov-18

GFA: 2194 LO# 80606

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 42,405 TOTAL HEAT GAIN 28,933
AIR FLOW RATE CFM 26.67 AIR FLOW RATE CFM 39.09

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 1131

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

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

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	11	7	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.

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	MBR	ENS	BED-3	BED-4	BED-3	WIC		BED-4	BED-2	LAUN	LV/DN	LV/DN	KT/FM	KT/FM	KT/FM	BATH	WIR	FOY		BAS	BAS	BAS	BAS
RM LOSS MBH	1.32	1.32	0.57	1.59	1.37	1.59	0.98		1.37	2.83	0.42	1.48	1.48	2.06	2.06	2.06	0.43	2.77	2.88		3.45	3.45	3.45	3.45
CFM PER RUN HEAT	35	35	15	42	36	42	26		36	78	11	39	39	55	55	55	11	74	77		92	92	92	92
RM GAIN MBH	1.95	1.95	0.16	1.93	2.17	1.93	0.76		2.17	2.85	1.29	1.46	1.46	2.06	2.06	2.06	0.11	0.63	0.78		0.29	0.29	0.29	0.29
CFM PER RUN COOLING	76	76	6	76	85	76	30		85	112	50	57	57	81	81	81	4	25	31		11	11	11	11
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.17	0.17		0.16	0.15	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17		0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	36	35	34	29	42	37	31		38	51	21	20	23	19	28	31	31	31	25		30	26	10	17
EQUIVALENT LENGTH	150	150	190	130	170	140	150		140	130	160	150	160	130	120	140	190	130	120		140	140	140	170
TOTAL EFFECTIVE LENGTH	186	185	224	159	212	177	181		178	181	181	170	183	149	148	171	221	161	145		170	165	150	187
ADJUSTED PRESSURE	0.09	0.09	0.08	0.11	0.08	0.1	0.1		0.09	0.08	0.1	0.1	0.09	0.11	0.11	0.09	0.08	0.11	0.12		0.1	0.1	0.11	0.09
ROUND DUCT SIZE	5	5	4	5	6	5	4		6	6	4	5	5	5	5	5	4	5	5		6	6	6	6
HEATING VELOCITY (ft/min)	257	257	172	308	184	308	298		184	388	126	286	286	404	404	404	126	543	565		469	469	469	469
COOLING VELOCITY (ft/min)	558	558	89	558	433	558	344		433	571	574	419	419	595	595	595	46	184	228		56	56	56	56
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	3X10	3X10		4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10		4X10	4X10	4X10	4X10
TRUNK	A	A	A	C	B	C	B		B	D	C	C	B	D	D	A	A	D	B		D	A	C	B

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

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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 243	0.08	8.3	8	547	TRUNK G 0	0.00	0	0	0
TRUNK B 306	0.08	9	10	551	TRUNK H 0	0.00	0	0	0
TRUNK C 532	0.08	11.1	16	599	TRUNK I 0	0.00	0	0	0
TRUNK D 352	0.08	9.5	10	634	TRUNK J 0	0.00	0	0	0
TRUNK E 775	0.08	12.7	20	698	TRUNK K 0	0.00	0	0	0
TRUNK F 0	0.00	0	0	0	TRUNK L 0	0.00	0	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	TRUNK X 1131	0.06	15.8	30	679
TRUNK P 0	0.06	0	0	8	TRUNK Y 795	0.06	13.8	22	650
TRUNK Q 0	0.06	0	0	8	TRUNK Z 0	0.06	0	0	8
TRUNK R 0	0.06	0	0	8	DROP 1131	0.06	15.8	24	679
TRUNK S 0	0.06	0	0	8					
TRUNK T 0	0.06	0	0	8					
TRUNK U 0	0.06	0	0	8					
TRUNK V 0	0.06	0	0	8					
TRUNK W 0	0.06	0	0	8					

RETURN AIR #	1	2	3	4	5	6																	BR
AIR VOLUME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	191
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	43	58	47	57	25	24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	
EQUIVALENT LENGTH	175	150	190	185	190	185	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	135	
TOTAL EFFECTIVE LH	218	218	237	242	215	209	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	149	
ADJUSTED PRESSURE	0.07	0.07	0.06	0.06	0.07	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	0.10	
ROUND DUCT SIZE	7	6	7	6	9.4	7.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.1	
INLET GRILL SIZE	8	8	8	8	8	8	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	
INLET GRILL SIZE	14	14	14	14	30	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	

TYPE: MILLWOOD 1
SITE NAME: MINNISSALE HOMES CORP

LO # 80606
OPT 4 BED LOT 26

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	4	@ 10.6 cfm	42.4	cfm
Other Rooms	4	@ 10.6 cfm	42.4	cfm
Table 9.32.3.A.	TOTAL		159.0	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	159 cfm
Less Principal Ventil. Capacity	79.5 cfm
Required Supplemental Capacity	79.5 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 1.08	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
WR	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 #:	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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	November-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

CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventilation Calculation)

LO#: 80606

Model: MILLWOOD 1

Builder: GREENPARK HOMES

Date: 11/2/2018

Volume Calculation

Air Change & Delta T Data

House Volume

Level	Floor Area (ft ²)	Floor Height (ft)	Volume (ft ³)
Bsmt	992	9	8928
First	992	10	9920
Second	1202	9	10818
Third	0	9	0
Fourth	0	9	0
Total:			29,666.0 ft ³
Total:			840.0 m ³

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

Design Temperature Difference

	T _{in} °C	T _{out} °C	ΔT °C	ΔT °F
Winter DTD _h	22	-19	41	74
Summer DTD _c	24	30	6	11

5.2.3.1 Heat Loss due to Air Leakage

6.2.6 Sensible Gain due to Air Leakage

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

$$0.382 \times 233.35 \times 41^\circ\text{C} \times 1.2 = 4414 \text{ W}$$

$$= 15060 \text{ Btu/h}$$

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

$$0.124 \times 233.35 \times 6^\circ\text{C} \times 1.2 = 213 \text{ W}$$

$$= 725 \text{ Btu/h}$$

5.2.3.2 Heat Loss due to Mechanical Ventilation

6.2.7 Sensible heat Gain due to Ventilation

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

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

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

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

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

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

Level	Level Factor (LF)	HL _{airbv} Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{level})	Air Leakage Heat Loss Multiplier (LF x HL _{airbv} / HL _{level})
1	0.5	15,060	6,282	1.199
2	0.3		10,289	0.439
3	0.2		10,358	0.291
4	0		0	0.000
5	0		0	0.000

 *HL_{airbv} = Air leakage heat loss + ventilation heat loss

 *For a balanced or supply only ventilation system HL_{airbv} = 0

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: MILLWOOD 1	OPT 4 BED LOT 26	BUILDER: GREENPARK HOMES
SFQT: 2194	LO# 80606	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):	29666.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.80	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 44.0 ft	WIDTH: 32.0 ft	EXPOSED PERIMETER:	125.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	27.0 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**

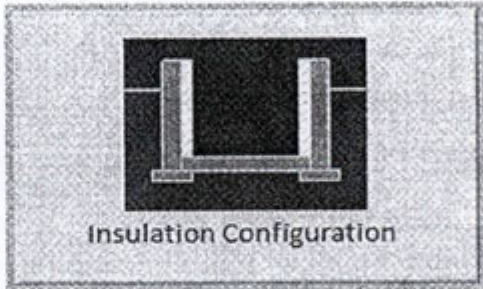
Nominal	Min. Eff.
60	59.22
31	27.65
31	29.80
22	17.03
20 ci	21.12
-	-
10	10
10	11.13
0.28	-
0.49	-
0.96	-
75%	-
0.8	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

Michael O'Rourke

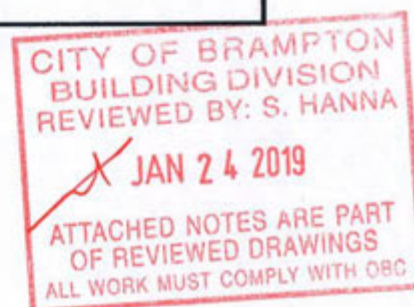
Residential Foundation Thermal Load Calculator

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):	4.9	 Insulation Configuration
Floor Width (m):	9.8	
Exposed Perimeter (m):	38.1	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.44	
Window Area (m ²):	1.1	
Door Area (m ²):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		809 ✓

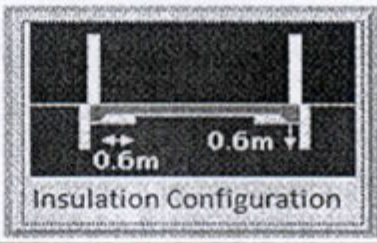
TYPE: MILLWOOD 1
LO# 80606

OPT 4 BED LOT 26



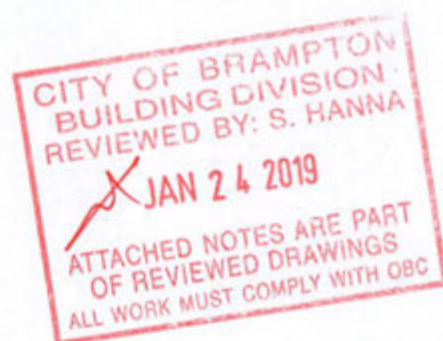
Residential Foundation Thermal Load Calculator

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):	1.8	
Width (m):	4.6	
Exposed Perimeter (m):	8.2	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):	74	

TYPE: MILLWOOD 1
LO# 80606

OPT 4 BED LOT 26



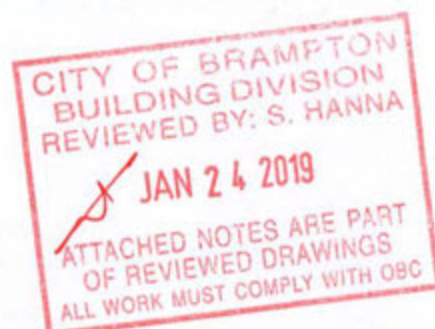
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

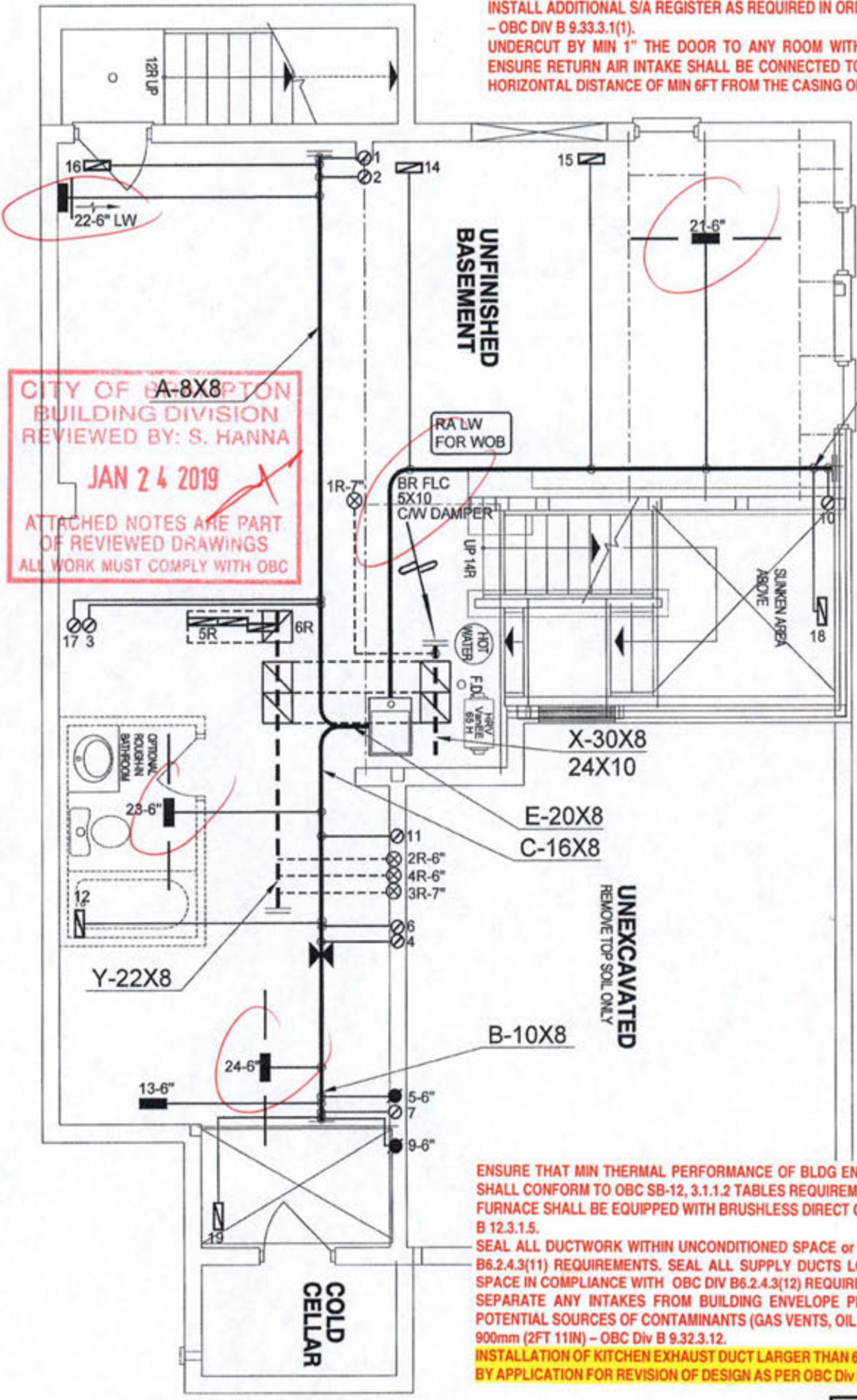
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	8.53			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	840.0			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH) ✓			
Custom BDT Data:	ELA @ 10 Pa.	1119.8 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			

TYPE: MILLWOOD 1
LO# 80606

OPT 4 BED LOT 26



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. HANNA
JAN 24 2019
ATTACHED NOTES ARE PART
OF REVIEWED DRAWINGS
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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.

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 AS PER OBC Div B PART 6 REQUIREMENTS.

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

CSA-F280-12
LOT 26 PACKAGE A1

I HEREBY CERTIFY THAT I HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.3 OF THE BUILDING CODE.
Michael O'Rourke, SCOP 2009
HVAC DESIGNS LTD.

HVAC LEGEND						REVISIONS		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Description	Date
	FLOOR SUPPLY AIR GRILLE		9" SUPPLY AIR BOOT ABOVE		14" RETURN AIR GRILLE	3.		
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		20" RETURN AIR GRILLE	2.		
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		2nd FLOOR RETURN AIR GRILLE	1.		
					REDUCER			

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD. AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Client
GREENPARK HOMES

Project Name
**MINNISALE HOMES CORP.
BRAMPTON, ONTARIO**

**OPT 4 BED LOT 26
MILLWOOD 1 2194 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 43997 BTU/H
UNIT DATA

MAKE
GOODMAN

MODEL
GMEC960603BNA

INPUT
60 MBTU/H

OUTPUT
57.6 MBTU/H

COOLING
2.5 TONS

FAN SPEED
1131 cfm @ 0.6" w.c.

OF RUNS S/A R/A FANS

	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	11	4	3
1ST FLOOR	7	2	2
BASEMENT	4	1	0

ALL S/A DIFFUSERS 4" x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5" UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

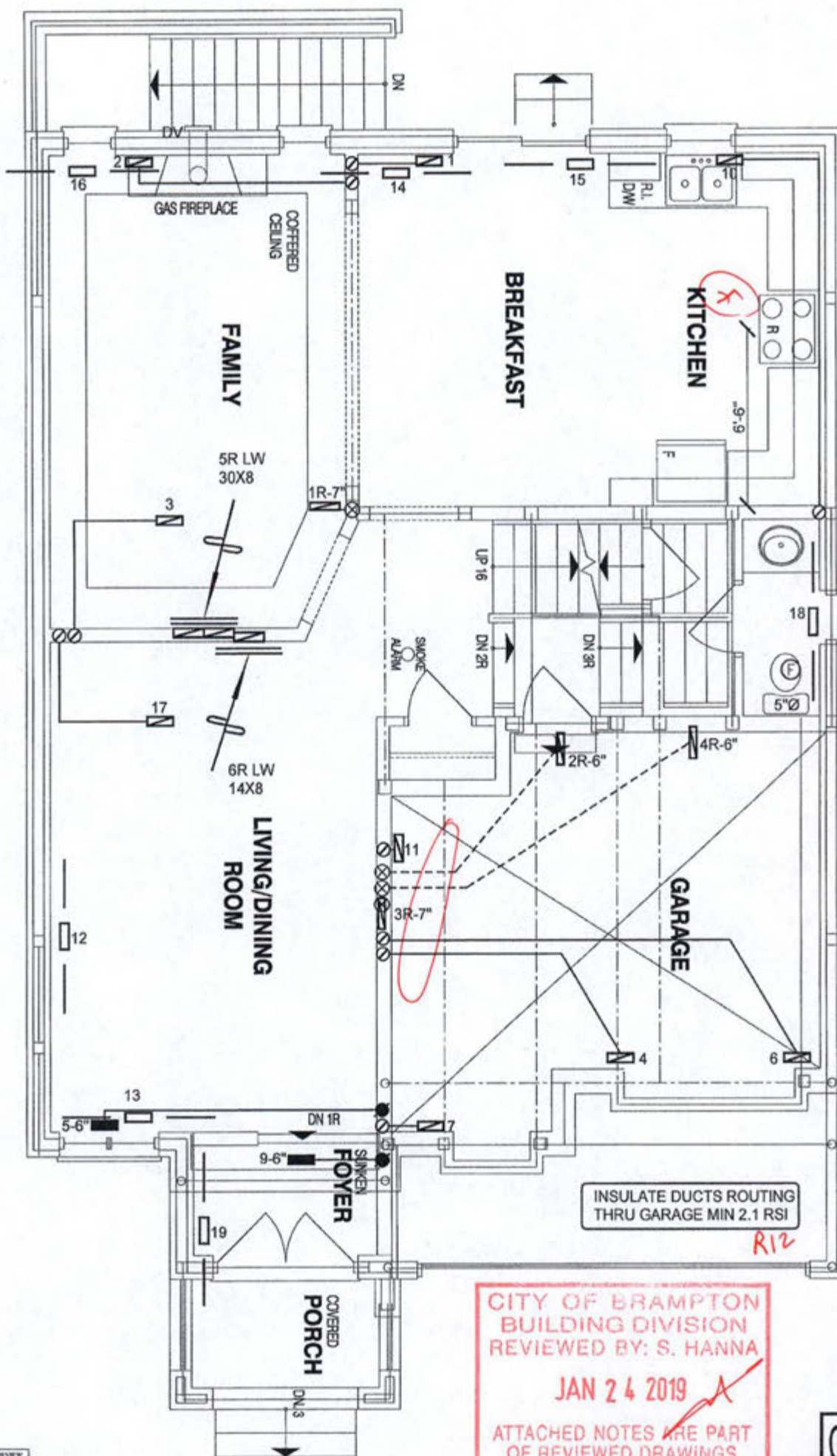
Sheet Title
BASEMENT HEATING LAYOUT

Date
NOV/2018

Scale
3/16" = 1'-0"

BCIN# 19669

LO# 80606



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. HANNA

JAN 24 2019

ATTACHED NOTES ARE PART
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CSA-F280-12

LOT 26 PACKAGE A1

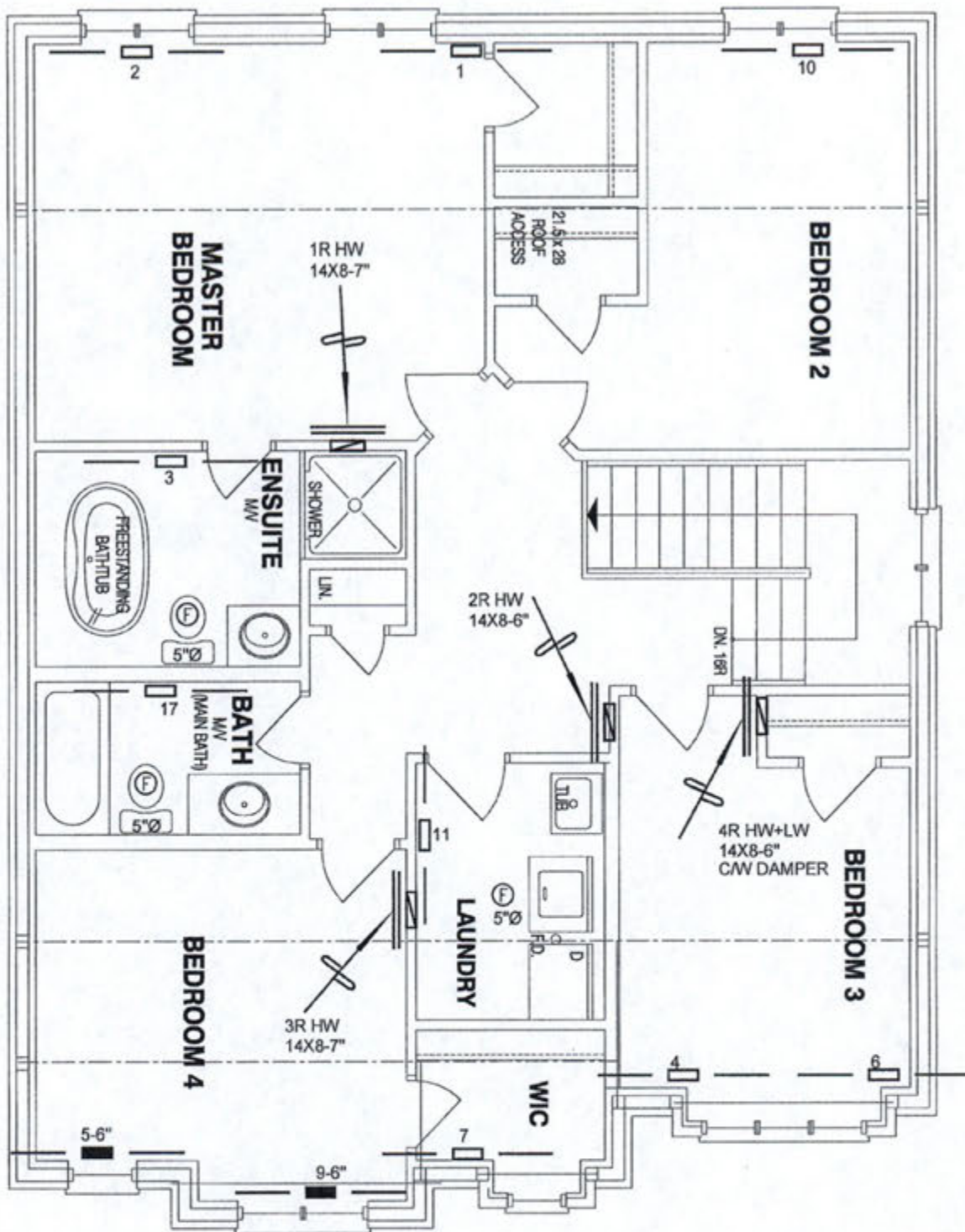
1 MICHAEL OROURKE HAS REVIEWED AND TAKES RESPONSIBILITY FOR THE DESIGN WORK AND ASSUMES ALL LIABILITY UNDER DIVISION C, 3.3.5 OF THE BUILDING CODE.

Michael O'Rourke
Michael O'Rourke, B.C.M. 1985
HVAC DESIGNS LTD.

HVAC LEGEND								
	FLOOR SUPPLY AIR GRILLE		6\"/>		14\"/>	3.		
	FLOOR SUPPLY AIR GRILLE 9\"/>		6\"/>		30\"/>	2.		
	SUPPLY AIR BOOT ABOVE		6\"/>		FRA-FLOOR RETURN AIR GRILLE	1.		
						No.	Description	Date

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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@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title	
GREENPARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name		Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.	Date	NOV/2018
MINNISALE HOMES CORP. BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
OPT 4 BED LOT 26 MILLWOOD 1 2194 sqft			BCIN# 19669	
			LO#	80606



CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. HANNA

JAN 24 2019

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CSA-F280-12

LOT 26

PACKAGE A1

1. I, MICHAEL OWEN, HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND ASSUMED THE DESIGNER'S RESPONSIBILITY FOR THE BUILDING CODE.

Michael Owen, B.Sc. 1988
HVAC DESIGN 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.	
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"X8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	Date	

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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@hvacadesigns.ca Web: www.hvacadesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title SECOND FLOOR HEATING LAYOUT	
Project Name MINNISALE HOMES CORP. BRAMPTON, ONTARIO			Date NOV/2018	
OPT 4 BED LOT 26 MILLWOOD 1 2194 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO#	80606

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.