

LOT 33

SITE NAME: MINNISALE HOMES CORP

BUILDER: GREENPARK HOMES

TYPE: MILLWOOD 12

GFA: 2642

DATE: Aug-18

LOR 79588

WINTER NATURAL AIR CHANGE RATE 0.364

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.	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	ENS-2
EXP. WALL	37		37	24	9	27	34	17	9	8
CLG. HT.	9		9	9	9	9	9	9	9	9
FACTORS										
GRS.WALL AREA	333		216	81	243	306	153	81	72	
GLAZING	LOSS GAIN		LOSS GAIN	LOSS GAIN	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	0 0 0	0 0 0	0 0 0
EAST	20.8 41.0 0 0 0		0 0 0	0 0 0	0 0 0	24 499 985	0 0 0	0 0 0	0 0 0	0 0 0
SOUTH	20.8 24.4 33 686 805		0 0 0	0 0 0	0 0 0	21 436 512	33 686 805	11 229 268	9 187 220	0 0 0
WEST	20.8 41.0 24 499 985		16 332 657	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
SKYL.T.	36.4 106.7 0 0 0		0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	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	0 0 0
NET EXPOSED WALL	4.4 0.6 276 1203 178		200 871 129	81 353 52	243 1069 157	261 1137 169	120 523 78	70 306 45	63 274 41	
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	0 0 0	
EXPOSED CLG	1.3 0.6 284 356 158		144 180 80	108 135 60	166 208 93	167 197 87	132 166 74	126 168 70	136 170 76	
NO ATTIC EXPOSED CLG	2.7 1.2 36 97 43		0 0 0	0 0 0	0 0 0	28 75 33	26 97 43	0 0 0	0 0 0	
EXPOSED FLOOR	2.5 0.4 0 0 0		0 0 0	0 0 0	166 413 61	16 40 8	24 60 9	0 0 0	136 339 50	
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	2839		1384	488	1680	2384	1530	691	971	
SUB TOTAL HT GAIN	2178		866	113	311	1793	1008	384	386	
LEVEL FACTOR / MULTIPLIER	0.20 0.26		0.20 0.26	0.20 0.26	0.20 0.26	0.20 0.26	0.20 0.26	0.20 0.26	0.20 0.26	
AIR CHANGE HEAT LOSS	742		362	128	439	623	400	181	264	
AIR CHANGE HEAT GAIN	133		53	7	19	118	62	23	24	
DUCT LOSS	0		0	0	212	301	193	0	122	
DUCT GAIN	0		0	0	152	309	226	0	41	
HEAT GAIN PEOPLE	240		2	480	0	1	240	1	0	
HEAT GAIN APPLIANCES/LIGHTS	947		947	0	947	947	947	0	0	
TOTAL HT LOSS BTU/H	3581		1746	616	2331	3367	2123	872	1346	
TOTAL HT GAIN x 1.3 BTU/H	4848		1195	155	2168	4417	3226	529	586	

ROOM USE	EXP. WALL	CLG. HT.	LWIDN	KT/PM	LAUN	WIR	FOY	MUD	WOD	BAS
EXP. WALL	66		66	69	9	13	11	13	36	166
CLG. HT.	10		10	10	9	10	10	10	9	9
FACTORS										
GRS.WALL AREA	660		690	81	130	110	130	324	1212	
GLAZING	LOSS GAIN		LOSS GAIN	LOSS GAIN	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	0 0 0	0 0 0	0 0 0
EAST	20.8 41.0 42 873 1724		0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
SOUTH	20.8 24.4 66 1371 1610		30 623 732	0 0 0	0 0 0	6 125 146	0 0 0	0 0 0	6 125 146	0 0 0
WEST	20.8 41.0 0 0 0		88 1828 3612	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	6 125 246	0 0 0
SKYL.T.	36.4 106.7 0 0 0		0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
DOORS	24.7 3.7 0 0 0		0 0 0	0 0 0	0 0 0	40 986 146	20 493 73	0 0 0	0 0 0	20 493 73
NET EXPOSED WALL	4.4 0.6 552 2406 357		572 2492 369	81 353 52	130 566 84	64 279 41	110 479 71	210 738 109	282 991 147	
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	0 0 0	
EXPOSED CLG	1.3 0.6 0 0 0		0 0 0	153 192 85	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		10 27 12	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	
EXPOSED FLOOR	2.5 0.4 0 0 0		0 0 0	68 169 25	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	0	
SLAB ON GRADE HEAT LOSS	0		0	0	0	0	0	0	0	
SUBTOTAL HT LOSS	4649		4971	714	566	1390	972	862	7341	
SUB TOTAL HT GAIN	3691		4725	163	84	334	144	356	366	
LEVEL FACTOR / MULTIPLIER	0.30 0.40		0.30 0.40	0.20 0.26	0.30 0.40	0.30 0.40	0.30 0.40	0.30 0.40	0.30 1.01	
AIR CHANGE HEAT LOSS	1841		1968	186	224	550	385	8282	44	
AIR CHANGE HEAT GAIN	226		289	10	5	20	0	0	0	
DUCT LOSS	0		0	90	0	0	0	0	0	
DUCT GAIN	0		0	112	0	0	0	0	0	
HEAT GAIN PEOPLE	240		0	0	0	0	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS	947		947	947	947	947	947	947	947	
TOTAL HT LOSS BTU/H	6490		6939	990	791	1940	1367	862	15623	
TOTAL HT GAIN x 1.3 BTU/H	6322		7750	1600	116	461	199	462	634	

ATTACHED NOTES ARE PART
 OF REVIEWED DRAWINGS
 REVIEWED BY: S. HANNA
 JAN 21 2019

TOTAL HEAT GAIN BTU/H:

34805

TONS: 2.90

LOSS DUE TO VENTILATION LOAD BTU/H: 1593

STRUCTURAL HEAT LOSS: 50914

TOTAL COMBINED HEAT LOSS BTU/H: 82507

SITE NAME: MINNISALE HOMES CORP
BUILDER: GREENPARK HOMES

TYPE: MILLWOOD 12

DATE: Aug-18

GFA: 2642 LO# 79588

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 50,914 TOTAL HEAT GAIN 34,569
AIR FLOW RATE CFM 22.21 AIR FLOW RATE CFM 32.72

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 @ 8" E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	11	8	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.

plenium pressure s/a 0.18 r/a pressure 0.17
max s/a dif press. loss 0.02 r/a grille press. Loss 0.02
min adjusted pressure s/a 0.16 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-3	MBR	ENS-2	LV/DN	LV/DN	KT/FM	KT/FM	KT/FM	LAUN	WIR	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.79	1.75	0.62	2.33	1.65	2.12	0.87	1.65	1.79	1.35	3.24	3.24	2.31	2.31	2.31	0.99	0.79	1.94	1.36	4.12	4.12	4.12	4.12
CFM PER RUN HEAT	40	39	14	52	37	47	19	37	40	30	72	72	51	51	51	22	18	43	30	92	92	92	92
RM GAIN MBH	2.42	1.20	0.16	2.17	2.21	3.23	0.53	2.21	2.42	0.59	3.16	3.16	2.58	2.58	2.58	1.60	0.12	0.46	0.20	0.25	0.25	0.25	0.25
CFM PER RUN COOLING	79	39	5	71	72	108	17	72	79	19	103	103	85	85	85	52	4	15	7	8	8	8	8
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	46	32	15	77	82	73	45	78	38	74	42	60	16	31	45	69	13	25	11	29	13	45	52
EQUIVALENT LENGTH	150	120	190	170	160	150	200	170	140	170	150	160	190	150	190	190	140	140	170	190	140	190	170
TOTAL EFFECTIVE LENGTH	196	152	205	247	242	223	245	248	178	244	192	220	206	181	235	249	153	165	181	219	153	235	222
ADJUSTED PRESSURE	0.09	0.11	0.08	0.07	0.07	0.07	0.07	0.07	0.1	0.07	0.08	0.07	0.08	0.09	0.07	0.07	0.11	0.1	0.1	0.07	0.11	0.07	0.07
ROUND DUCT SIZE	5	4	4	6	6	6	4	6	5	4	6	6	6	6	6	5	4	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	294	447	161	265	189	240	218	189	294	344	367	367	260	260	260	162	207	493	344	469	469	469	469
COOLING VELOCITY (ft/min)	580	447	57	362	367	540	195	367	580	218	525	525	433	433	433	382	46	172	80	41	41	41	41
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	4X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	D	C	B	A	B	B	A	C	B	B	A	C	C	C	B	D	C	C	C	D	B	A

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-3	MBR	ENS-2	LV/DN	LV/DN	KT/FM	KT/FM	KT/FM	LAUN	WIR	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.79	1.75	0.62	2.33	1.65	2.12	0.87	1.65	1.79	1.35	3.24	3.24	2.31	2.31	2.31	0.99	0.79	1.94	1.36	4.12	4.12	4.12	4.12
CFM PER RUN HEAT	40	39	14	52	37	47	19	37	40	30	72	72	51	51	51	22	18	43	30	92	92	92	92
RM GAIN MBH	2.42	1.20	0.16	2.17	2.21	3.23	0.53	2.21	2.42	0.59	3.16	3.16	2.58	2.58	2.58	1.60	0.12	0.46	0.20	0.25	0.25	0.25	0.25
CFM PER RUN COOLING	79	39	5	71	72	108	17	72	79	19	103	103	85	85	85	52	4	15	7	8	8	8	8
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	46	32	15	77	82	73	45	78	38	74	42	60	16	31	45	69	13	25	11	29	13	45	52
EQUIVALENT LENGTH	150	120	190	170	160	150	200	170	140	170	150	160	190	150	190	190	140	140	170	190	140	190	170
TOTAL EFFECTIVE LENGTH	196	152	205	247	242	223	245	248	178	244	192	220	206	181	235	249	153	165	181	219	153	235	222
ADJUSTED PRESSURE	0.09	0.11	0.08	0.07	0.07	0.07	0.07	0.07	0.1	0.07	0.08	0.07	0.08	0.09	0.07	0.07	0.11	0.1	0.1	0.07	0.11	0.07	0.07
ROUND DUCT SIZE	5	4	4	6	6	6	4	6	5	4	6	6	6	6	6	5	4	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	294	447	161	265	189	240	218	189	294	344	367	367	260	260	260	162	207	493	344	469	469	469	469
COOLING VELOCITY (ft/min)	580	447	57	362	367	540	195	367	580	218	525	525	433	433	433	382	46	172	80	41	41	41	41
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	4X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	D	C	B	A	B	B	A	C	B	B	A	C	C	C	B	D	C	C	C	D	B	A

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED

JAN 21 2019

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

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	238	0.07	8.5	10	x	8	428		
TRUNK B	572	0.07	11.8	18	x	8	572		
TRUNK C	984	0.07	14.4	26	x	8	681		
TRUNK D	149	0.11	6.3	6	x	8	447		
TRUNK E	0	0.00	0	0	x	8	0		
TRUNK F	0	0.00	0	0	x	8	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 G	0	0.05	0	0	x	8	0		
TRUNK H	0	0.05	0	0	x	8	0		
TRUNK I	0	0.05	0	0	x	8	0		
TRUNK J	0	0.05	0	0	x	8	0		
TRUNK K	0	0.05	0	0	x	8	0		
TRUNK L	0	0.05	0	0	x	8	0		
TRUNK M	0	0.05	0	0	x	8	0		
TRUNK N	0	0.05	0	0	x	8	0		
TRUNK O	0	0.05	0	0	x	8	0		
TRUNK P	0	0.05	0	0	x	8	0		
TRUNK Q	0	0.05	0	0	x	8	0		
TRUNK R	0	0.05	0	0	x	8	0		
TRUNK S	0	0.05	0	0	x	8	0		
TRUNK T	0	0.05	0	0	x	8	0		
TRUNK U	0	0.05	0	0	x	8	0		
TRUNK V	0	0.05	0	0	x	8	0		
TRUNK W	0	0.05	0	0	x	8	0		
TRUNK X	1131	0.05	16.5	26	x	10	626		
TRUNK Y	440	0.05	11.6	16	x	8	495		
TRUNK Z	0	0.05	0	0	x	8	0		
DROP	1131	0.05	16.5	24	x	10	679		

RETURN AIR #	1	2	3	4	5	6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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TYPE: MILLWOOD 12
SITE NAME: MINNISSALE HOMES CORP

LO # 79588

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/on 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: VANE 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
ENS-2	FV-05-11VK1	50	☒	0.3
WR	FV-05-11VK1	50	☒	0.3

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANE 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: **CITY OF BRAMPTON BUILDING DIVISION**
Address: **REVIEWED BY: S. HANNA**
City: **JAN 21 2019**
Telephone #: **ATTACHED NOTES ARE PART OF REVIEWED DRAWINGS**
Fax #: **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: *Michael O'Rourke*

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

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

LO#: 79588

Model: MILLWOOD 12

Builder: GREENPARK HOMES

Date: 8/9/2018

Volume Calculation
House Volume

Level	Floor Area (ft ²)	Floor Height (ft)	Volume (ft ³)
Bsmt	1144	9	10296
First	1144	10	11440
Second	1498	9	13482
Third	0	9	0
Fourth	0	9	0
Total:			35,218.0 ft ³
Total:			997.3 m ³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.354
SUMMER NATURAL AIR CHANGE RATE	0.115

Design Temperature Difference				
	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-19	41	74
Summer DTDc	24	30	6	11

5.2.3.1 Heat Loss due to Air Leakage

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

0.354 x 277.02 x 41 °C x 1.2 = 4854 W

= 16563 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

0.115 x 277.02 x 6 °C x 1.2 = 234 W

= 798 Btu/h

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

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

6.2.7 Sensible heat Gain due to Ventilation

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

80 CFM x 11 °F x 1.08 x 0.25 = 236 Btu/h

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

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

Level	Level Factor (LF)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{cleve})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HL _{level})
1	0.5	16,563	8,203	1.010
2	0.3		12,548	0.396
3	0.2		12,682	0.261
4	0		0	0.000
5	0		0	0.000

*HLairbv = Air leakage heat loss + ventilation heat loss

*For a balanced or supply only ventilation system HLairve = 0

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: MILLWOOD 12

BUILDER: GREENPARK HOMES

SFQT: 2642

LO# 79588

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):	35218.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.75	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 51.0 ft	WIDTH: 32.0 ft	EXPOSED PERIMETER:	166.0 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 BY: S. HANNA

JAN 21 2019

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

**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	-

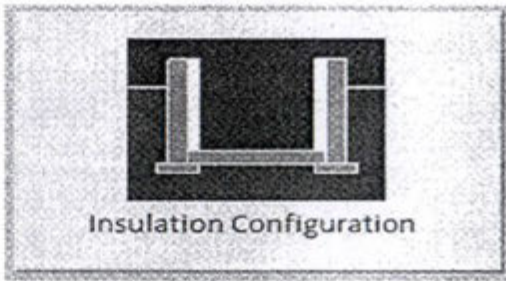
INDIVIDUAL BCIN: 19669

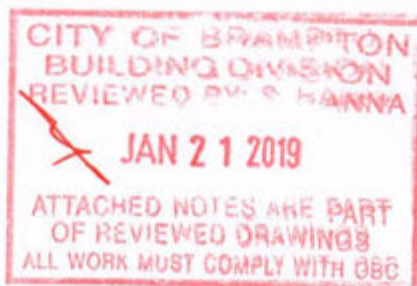
MICHAEL O'ROURKE

Michael O'Rourke

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

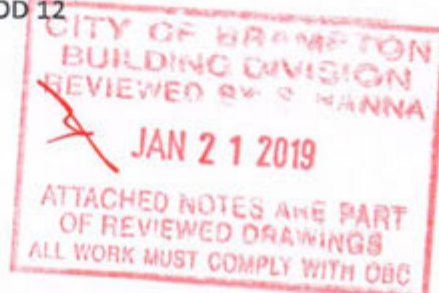
Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.5	
Floor Width (m):	9.8	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
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):	1680	

TYPE: MILLWOOD 12
LO# 79588

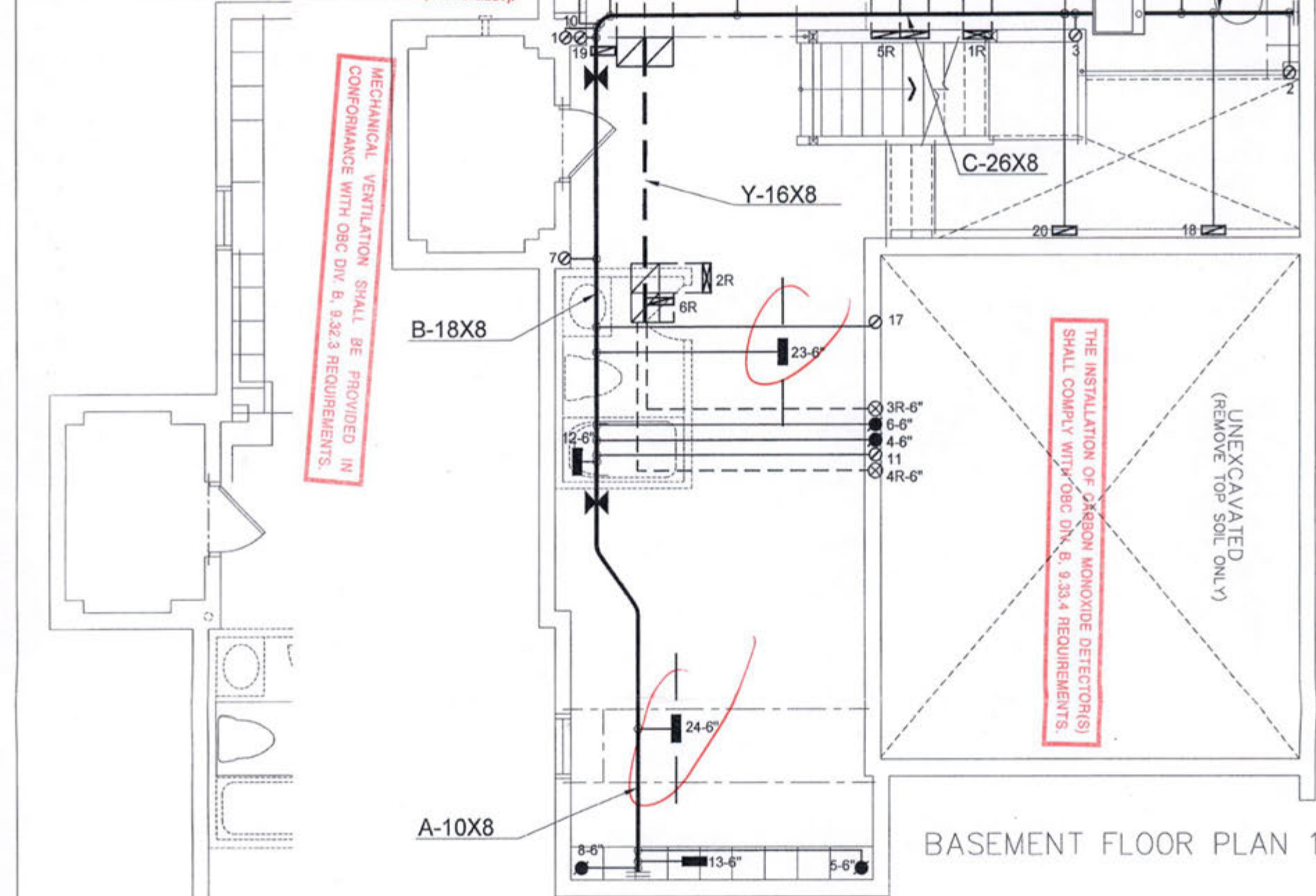
Air Infiltration Residential Load Calculator

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:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	997.3			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1329.4 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):	0.354			
Cooling Air Leakage Rate (ACH/H):	0.115			

TYPE: MILLWOOD 12
LO# 79588

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).



BASEMENT FLOOR PLAN 1

BASEMENT FLOOR PLAN 2

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

CITY OF GRANTON
BUILDING DIVISION
REVIEWED BY: S. HANNA

JAN 21 2019

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

I, MICHAEL O'BROUKE, HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

Michael O'Brouke

Michael O'Brouke, BCIN# 15608
IYVAC DESIGNS LTD.

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION			
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x0" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x0" 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		

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

LOT 33

MILLWOOD 12 2642 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@hvacdesigns.ca

Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services

Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

HEAT LOSS 52507 BTU/H		# OF RUNS			S/A	R/A	FAN
UNIT DATA		3RD FLOOR					
MAKE	GOODMAN	2ND FLOOR			11	4	4
MODEL	GMEC960603BNA-60	1ST FLOOR			8	2	2
INPUT	60 MBTUH	BASEMENT			4	1	0
OUTPUT	57.6 MBTUH	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					
COOLING	3.0 TONS						
FAN SPEED	1131 cfm @ 0.6" w.g.						

Sheet Title	
BASEMENT HEATING LAYOUT	
Date	AUG/2018
Scale	3/16" = 1'-0"
BCIN# 19669	
LO#	79588

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 1-800-783-1314

OUTSIDE AIR (VENTILATION) SHALL BE PROVIDED IN ACCORDANCE WITH ASHRAE 62.2 VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY 6.2.2.1(2)

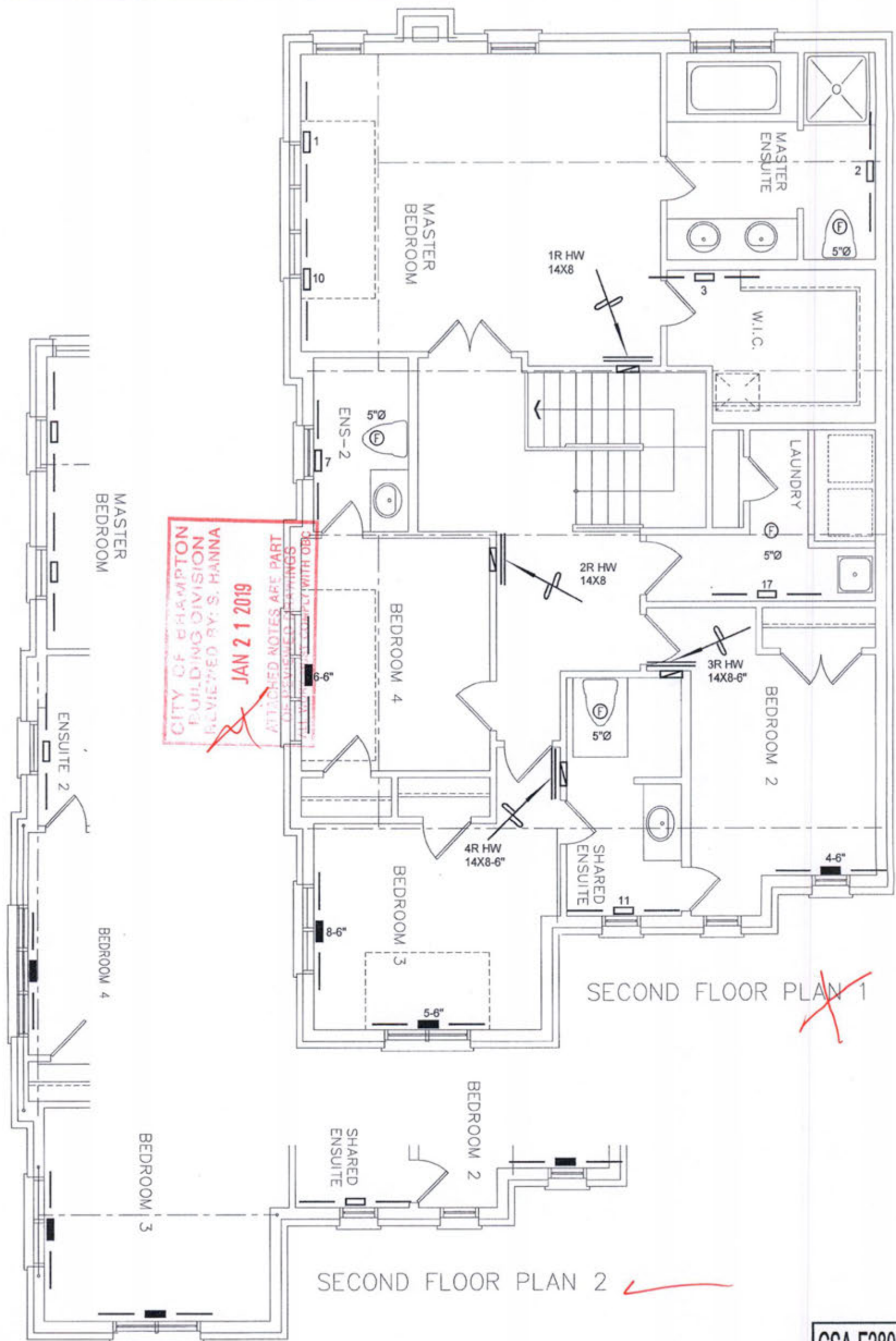
CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. HANNA
JAN 21 2019
ATTACHED NOTES ARE PART
OF REVIEWED DRAWINGS
ALL WORK MUST COMPLY WITH OBC

I MICHAEL O'ROURKE 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
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 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	
LOT 33		Scale 3/16" = 1'-0"		
		BCIN# 19669		
MILLWOOD 12 2642 sqft		LO#	79588	



I MICHAEL O'DRISCOLL HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.
Michael O'Driscoll
 Michael O'Driscoll, BCIN# 19669
 HVAC DESIGNS LTD.

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 33
MILLWOOD 12 2642 sqft

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Sheet Title
SECOND FLOOR HEATING LAYOUT
 Date **AUG/2018**
 Scale **3/16" = 1'-0"**
 BCIN# 19669
 LO# **79588**