

SITE NAME: MINNISALE HOMES CORP
BUILDER: GREENPARK HOMES

LOT 23
TYPE: MILLWOOD 2

GFA: 2654

DATE: Oct-18
LO# 80882

WINTER NATURAL AIR CHANGE RATE 0.314
SUMMER NATURAL AIR CHANGE RATE 0.192

HEAT LOSS ΔT °F. 74
HEAT GAIN ΔT °F. 11

CSA-F280-12
SB-12 PACKAGE A1

ROOM USE		MBR		ENS		BED-2		BED-3		BED-4		BATH		ENS-2	
EXP. WALL		34		29		28		33		11		13		15	
CLG. HT.		10		9		9		10		9		9		9	
FACTORS															
GRS.WALL AREA		340		261		234		330		99		99		136	
GLAZING		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
EAST		20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH		20.8	24.4	0	0	0	10	208	244	0	0	0	0	0	0
WEST		20.8	41.0	32	665	1214	12	249	493	0	0	0	0	0	0
SKYL.T.		36.4	100.7	0	0	0	0	0	0	0	0	0	0	0	0
DOORS		24.7	3.7	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL		4.4	6.6	306	1342	199	239	1041	954	214	932	138	300	1207	194
NET EXPOSED WMT WALL ABOVE GR		3.5	6.5	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG		1.3	6.6	280	351	195	204	256	114	165	267	92	195	244	109
NO ATTIC EXPOSED CLG		2.7	1.2	0	0	0	0	0	0	0	0	0	40	107	48
EXPOSED FLOOR		2.8	6.4	0	0	0	0	0	0	165	411	61	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				2356		1764		1966		2282		904		744	
SUB TOTAL HT GAIN					1669		1808		1112		1582		472		346
LEVEL FACTOR / MULTIPLIER		0.29	0.23			0.29	0.23	0.29	0.23	0.29	0.23	0.20	0.23		0.20
AIR CHANGE HEAT LOSS				541		403		451		524		208		171	
AIR CHANGE HEAT GAIN					111		37		74		105		31		23
DUCT LOSS				0		0		242		0		0		0	
DUCT GAIN						0		205		0		0		0	
HEAT GAIN PEOPLE		240		2		480	0	1		240	1	240	0	0	0
HEAT GAIN APPLIANCES/LIGHTS						627		627		627		627		627	
TOTAL HT LOSS BTUH				2899		2167		2658		2806		1112		915	
TOTAL HT GAIN x 1.3 BTUH					3782		2208		2936		3320		1781		1295

ROOM USE	EXP. WALL	CLQ. HT.	LIV	KT/PM	LAUN	W/R	FOY	MUD	WLB	BA5
			38	78	8	12	27	17	16	138
			10	10	9	11	10	11	9	9
FACTORS										
GRS.WALL AREA	LOSS	GAIN	380	780	72	132	270	187	144	828
GLAZING	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN
NORTH	20.8	15.5	0	0	0	0	0	0	0	0
EAST	20.8	41.0	0	0	10	208	410	0	0	0
SOUTH	20.8	34.4	40	821	0	0	0	0	0	10
WEST	20.8	41.0	0	0	0	0	0	0	10	208
SKYL.T.	36.4	100.7	0	0	0	0	0	0	0	244
DOORS	24.7	3.7	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.4	6.6	340	1481	220	688	2968	444	0	0
NET EXPOSED WMT WALL ABOVE GR	3.5	6.6	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	6.6	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	36	97	43	0	0
EXPOSED FLOOR	2.8	6.4	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0	0	0	128	319	47	0	0
SLAB ON GRADE HEAT LOSS			0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS			2312	5083	3516	957	739	323	1287	1241
SUB TOTAL HT GAIN									181	633
LEVEL FACTOR / MULTIPLIER	0.30	0.37		0.30	0.37	0.30	0.37	0.30	0.37	0.30
AIR CHANGE HEAT LOSS			857	1864	220	274	773	452		886
AIR CHANGE HEAT GAIN			79		233	38	21	36	12	59
DUCT LOSS			0	0	0	118	0	0	0	0
DUCT GAIN			0	0	0	123	0	0	0	0
HEAT GAIN PEOPLE	240		0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS			627	627	627	627	627	627	627	627
TOTAL HT LOSS BTUH			3169	6967	1294	1765	1013	2860	1673	13844
TOTAL HT GAIN x 1.3 BTUH			2473	5689			447	745	1068	769

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

NOV 26 2018

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TOTAL HEAT GAIN BTUH: 29606

TONS: 2.47

LOSS DUE TO VENTILATION LOAD BTUH: 1883

STRUCTURAL HEAT LOSS: 46432

TOTAL COMBINED HEAT LOSS BTUH: 48625

Michael O'Rourke

SITE NAME: MINNISALE HOMES CORP
BUILDER: GREENPARK HOMES

LOT 23
TYPE: MILLWOOD 2

DATE: Oct-18

GFA: 2654

LO# 80552

HEATING CFM 1131
TOTAL HEAT LOSS 46,432
AIR FLOW RATE CFM 24.36

COOLING CFM 1131
TOTAL HEAT GAIN 29,369
AIR FLOW RATE CFM 38.51

furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure for s/a & r/a 0.35

plenum pressure s/a 0.18
max s/a dif press. loss 0.02
min adjusted pressure s/a 0.16

r/a pressure 0.17
r/a grille press. Loss 0.02
adjusted pressure r/a 0.15

#GOODMAN
GMEC980803BNA 80

FAN SPEED

LOW

MEDLOW

MEDIUM

MEDIUM HIGH

HIGH 1131

AFUE = 96 %
INPUT (BTU/H) = 80,000
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	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	4	5	6	7	8	9	10	11	12	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	BATH	BED-2	BED-3	MBR	ENS-2	LIV	KT/FM	KT/FM	KT/FM	LAUN	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.45	2.16	1.33	1.40	1.11	0.91	1.33	1.40	1.45	1.82	3.17	2.32	2.32	2.32	1.29	1.01	2.88	1.67	3.77	3.77	3.77	3.77
CFM PER RUN HEAT	35	53	32	34	27	22	32	34	35	44	77	57	57	57	32	25	70	41	92	92	92	92
RM GAIN MBH	1.88	2.21	1.47	1.66	1.78	1.30	1.47	1.66	1.88	0.66	2.47	1.90	1.90	1.90	1.76	0.45	0.74	1.07	0.31	0.31	0.31	0.31
CFM PER RUN COOLING	72	85	57	64	69	50	57	64	72	25	95	73	73	73	68	17	29	41	12	12	12	12
ADJUSTED PRESSURE	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	55	54	46	33	15	37	47	47	45	38	15	48	44	49	39	39	29	32	39	64	20	10
EQUIVALENT LENGTH	190	160	140	140	160	110	140	160	150	140	120	130	110	140	130	140	90	160	150	200	110	150
TOTAL EFFECTIVE LENGTH	245	214	186	173	175	147	187	207	195	178	135	178	154	189	189	179	119	192	189	264	130	160
ADJUSTED PRESSURE	0.07	0.08	0.09	0.1	0.1	0.12	0.09	0.08	0.09	0.1	0.12	0.1	0.11	0.09	0.1	0.1	0.14	0.09	0.09	0.06	0.12	0.1
ROUND DUCT SIZE	6	6	5	5	5	4	5	5	5	4	6	5	5	5	5	4	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	178	270	235	250	198	252	235	250	178	505	393	419	419	419	235	287	514	470	469	469	469	469
COOLING VELOCITY (ft/min)	367	433	419	470	507	574	419	470	367	287	484	536	536	536	499	195	213	470	61	61	61	61
OUTLET GRILL SIZE	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	B	D	C	B	D	D	C	A	D	C	A	A	A	D	B	C	B	A	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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BUILDING DIVISION
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SUPPLY AIR TRUNK SIZE

SPLIT AIR FLOW RATE															
	TRUNK	STATIC	ROUND	RECT	VELOCITY				TRUNK	STATIC	ROUND	RECT	VELOCITY		
	CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT	(ft/min)		
TRUNK A	425	0.06	10.9	14	x	8	546	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	663	0.06	12.9	20	x	8	597	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	307	0.08	9	10	x	8	553	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	469	0.08	10.6	14	x	8	603	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 TRUNK SIZE

THE FURNACE FAN PROPER SIZE											
TRUNK		STATIC	ROUND		RECT		VELOCITY				
	CFM	PRESS.	DUCT		DUCT						(ft/min)
TRUNK O	0	0.07	0		0		x	8		0	
TRUNK P	0	0.07	0		0		x	8		0	
TRUNK Q	0	0.07	0		0		x	8		0	
TRUNK R	0	0.07	0		0		x	8		0	
TRUNK S	0	0.07	0		0		x	8		0	
TRUNK T	0	0.07	0		0		x	8		0	
TRUNK U	0	0.07	0		0		x	8		0	
TRUNK V	0	0.07	0		0		x	8		0	
TRUNK W	0	0.07	0		0		x	8		0	
TRUNK X	1131	0.07	15.2		30		x	8		679	
TRUNK Y	295	0.07	9.2		10		x	8		531	
TRUNK Z	0	0.07	0		0		x	8		0	
DROP	1131	0.07	15.2		24		x	10		679	

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	14	15	16	17	18	19	20	21	22	23	24
AIR VOLUME	160	155	95	95	135	310	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
ACTUAL DUCT LGH	58	43	42	48	38	15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	150	135	175	175	145	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LENGTH	208	178	217	223	183	150	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	0.10	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	8	8	6.6	8.6	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
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
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

TYPE: MILLWOOD 2
SITE NAME: MINNISALE HOMES CORP

LO #: 80552
LOT 23

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	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.		TOTAL	190.8	cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED 9.32.3.4(1)

1 Bedroom	31.8	cfm
2 Bedroom	47.7	cfm
3 Bedroom	63.6	cfm
4 Bedroom	79.5	cfm
5 Bedroom	95.4	cfm
TOTAL	79.5	cfm

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	190.8	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	111.3	cfm

PRINCIPAL EXHAUST FAN CAPACITY
Model: VANEE 65H Location: BSMT
79.5 cfm 3.0 sones ☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM	ΔT °F	FACTOR	% LOSS
79.5 CFM	74 F	1.08	0.25

SUPPLEMENTAL FANS PANASONIC

Location	Model	cfm	HVI	Sones
ENS	FV-05-11VK1	50	✓	0.3
BATH	FV-05-11VK1	50	✓	0.3
ENS-2	FV-05-11VK1	50	✓	0.3
W/R	FV-05-11VK1	50	✓	0.3

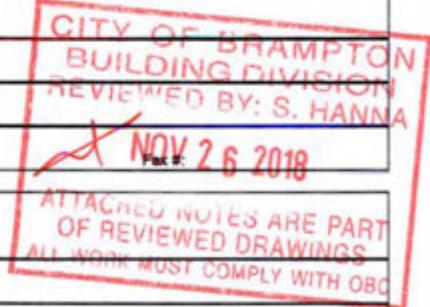
HEAT RECOVERY VENTILATOR 9.32.3.11.
Model: VANEE 65H
155 cfm high 64 cfm low
75 % Sensible Efficiency @ 32 deg F (0 deg C) ☒ HVI Approved

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: *Michael O'Rourke*
HRAJ #: 001820
Date: October-18

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 1.2.5 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#: 80552

Model: MILLWOOD 2

Builder: GREENPARK HOMES

Date: 10/31/2018

Volume Calculation
House Volume

Level	Floor Area (ft ²)	Floor Height (ft)	Volume (ft ³)
Bsmt	1148	9	10332
First	1148	10	11480
Second	1506	8	12048
Third	0	9	0
Fourth	0	9	0
Total:			33,860.0 ft ³
Total:			958.8 m ³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.314
SUMMER NATURAL AIR CHANGE RATE	0.102

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

$$HL_{alrb} = LR_{alrh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

$$0.314 \times 266.34 \times 41^\circ\text{C} \times 1.2 = 4143 \text{ W}$$

$$= 14134 \text{ Btu/h}$$

6.2.6 Sensible Gain due to Air Leakage

$$HG_{snlb} = LR_{alrc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$$

$$0.102 \times 266.34 \times 6^\circ\text{C} \times 1.2 = 199 \text{ W}$$

$$= 680 \text{ Btu/h}$$

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)

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

Level	Level Factor (LF)	HL _{alrbv} Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{cleve})	Air Leakage Heat Loss Multiplier (LF x HL _{alrbv} / HL _{cleve})
1	0.5	14,134	8,018	0.881
2	0.3		11,442	0.371
3	0.2		12,313	0.230
4	0		0	0.000
5	0		0	0.000

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

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

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: MILLWOOD 2	LOT 23	BUILDER: GREENPARK HOMES
SFQT: 2654	LO# 80552	SITE: MINNISALE 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:	SOUTH	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):	33860.0	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:	6.0 ft
LENGTH: 46.0 ft	WIDTH: 31.0 ft	EXPOSED PERIMETER:	138.0 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
X NOV 26 2018
ATTACHED NOTES ARE PART
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Compliance Package**A1**

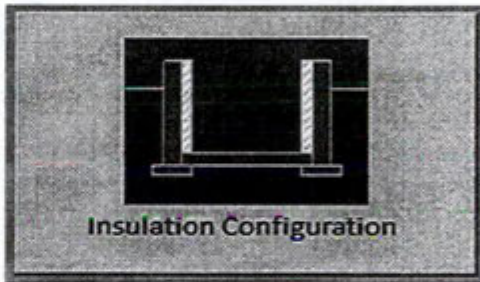
Nominal	Min. Eff.
60	59.22
31	27.65
31	29.80
22	17.03
20 ci	21.12
-	-
10	10
10	11.13
0.28	-
0.49	-
0.96	-
75%	-
0.8	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

Michael O'Rourke

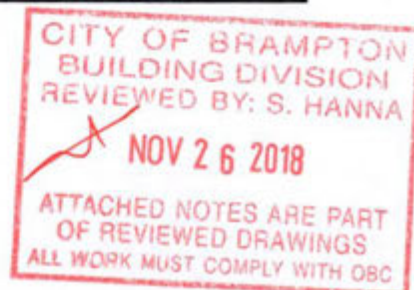
Residential Foundation Thermal Load Calculator

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):	14.0	 Insulation Configuration
Floor Width (m):	9.4	
Exposed Perimeter (m):	42.1	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.4	
Door Area (m ²):	3.7	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	1354	

TYPE: MILLWOOD 2
LO# 80552

LOT 23



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):	6.40			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	958.8			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa. 3.57	1278.1 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):		0.314		
Cooling Air Leakage Rate (ACH/H):		0.102		

TYPE: MILLWOOD 2
LO# 80552

LOT 23



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
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REVIEWED BY: J. HANNA
NOV 26 2018
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INSTALLATION OF HVAC EQUIPMENTS
SHALL CONFORM TO MANUFACTURER'S SPECIFICATIONS
AND MANUALS

I MICHAEL O'Rourke HAVE REVIEW
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C, 3.2.3 OF THE
BUILDING CODE.
Michael O'Rourke, BCMP 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.	
	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 23
MILLWOOD 2

2654 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	48025 BTU/H	# OF RUNS	S/A	R/A	FANS
UNIT DATA		3RD FLOOR			
MAKE	GOODMAN	2ND FLOOR	11	4	3
MODEL	GMEC960603BNA	1ST FLOOR	7	2	2
INPUT	60 MBTU/H	BASEMENT	4	1	0
OUTPUT	57.6 MBTU/H	ALL S/A DIFFUSERS 4"x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A			
COOLING	2.5 TONS				
FAN SPEED	1131 cfm @ 0.8" w.g.				

Sheet Title

**BASEMENT
HEATING
LAYOUT**

Date

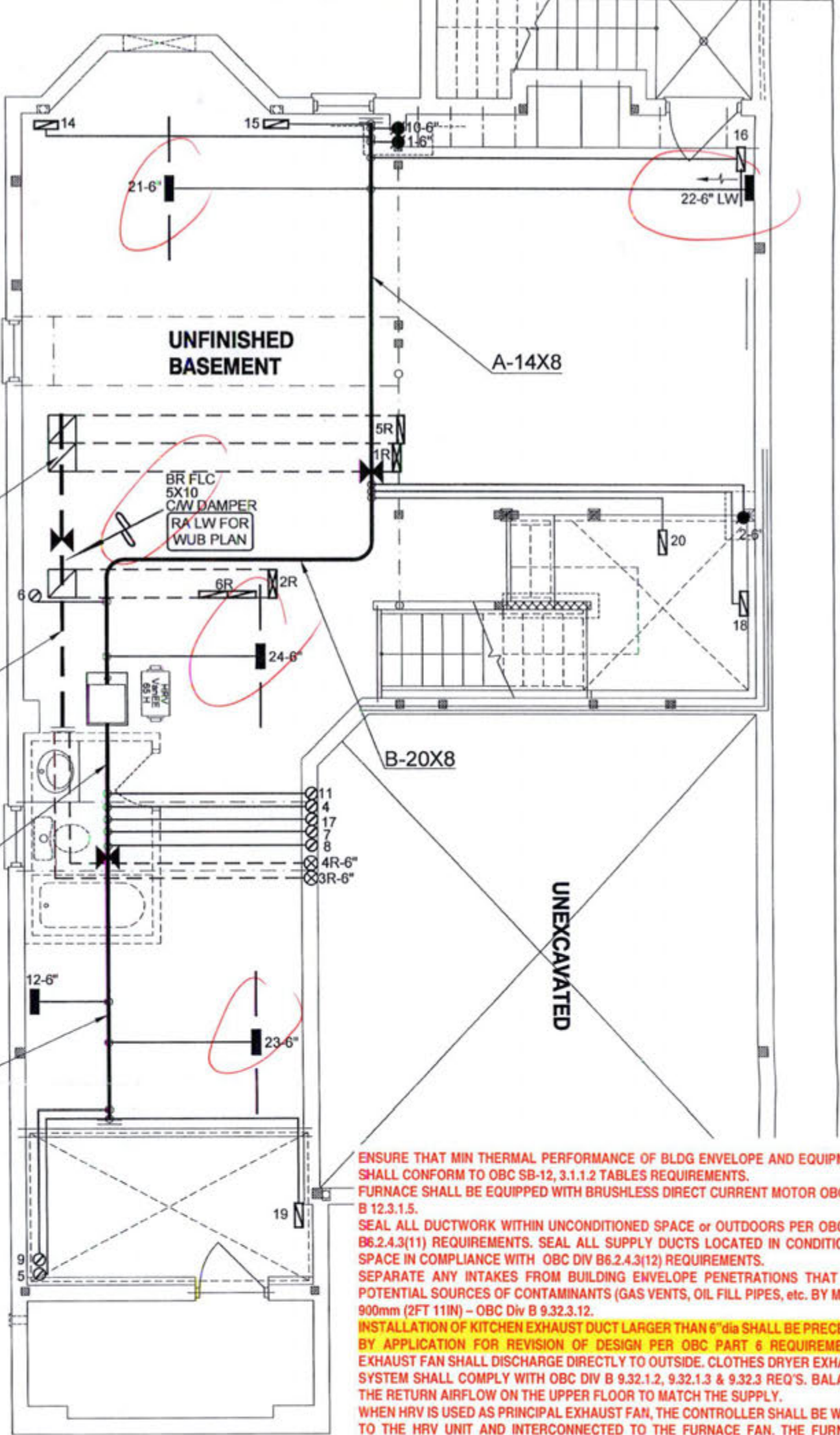
OCT/2018

Scale

3/16" = 1'-0"

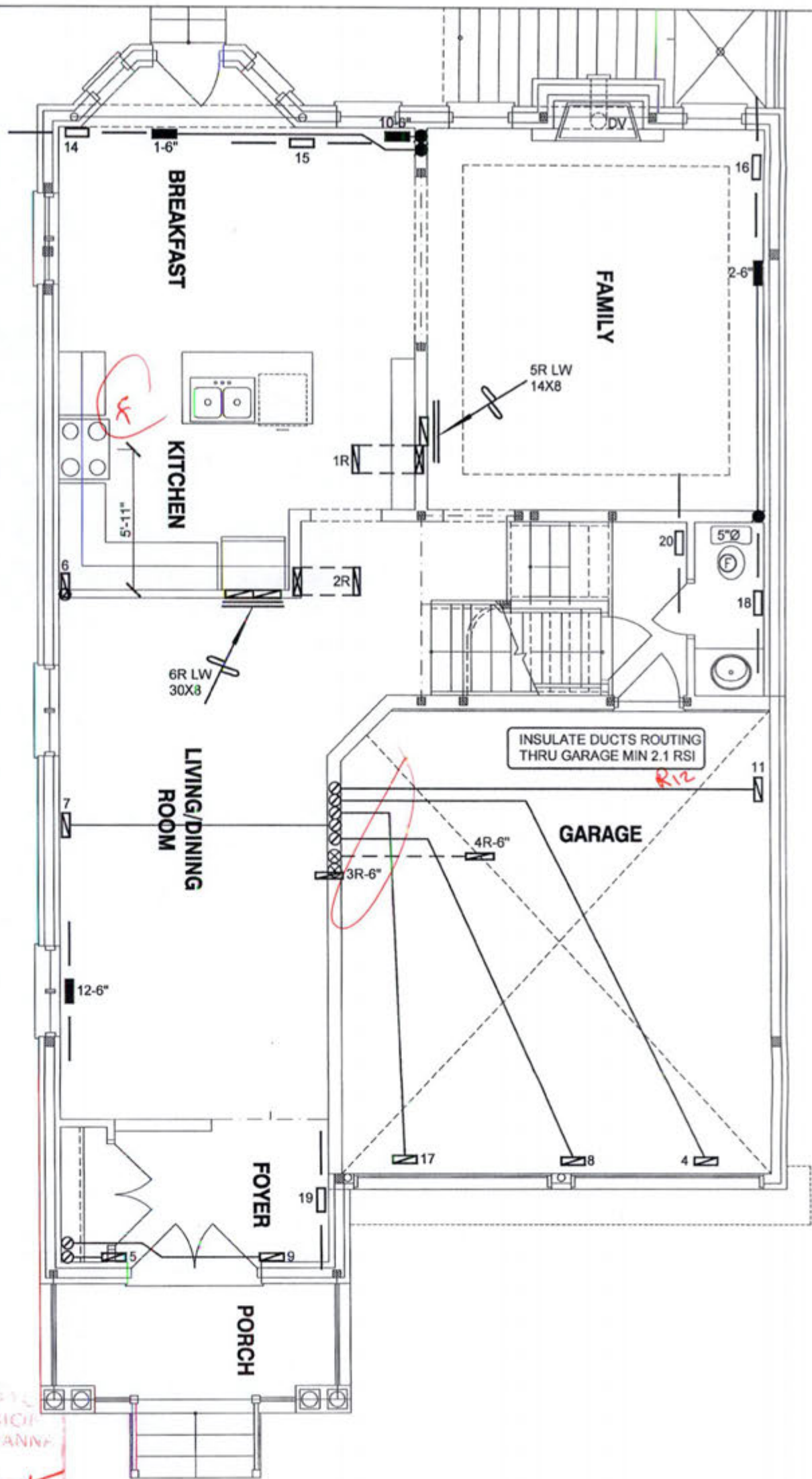
BCIN# 19669

LO# 80552



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).

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
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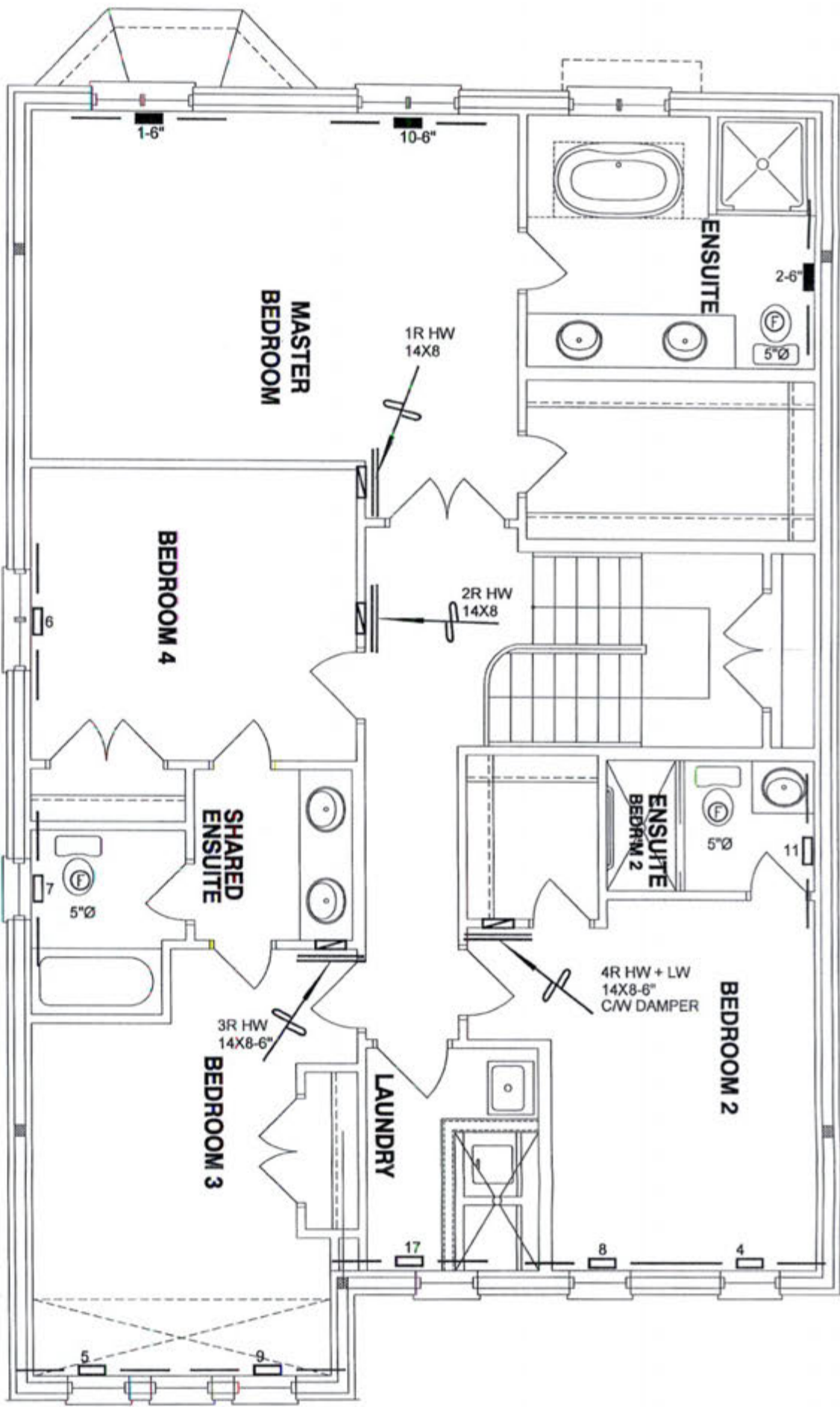
I MICHAEL O'BROCK HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.3 OF THE BUILDING CODE.
Michael O'Brock
Michael O'Brock, BCIN# 19669
HVAC DESIGNS LTD.

WUB
CSA-F280-12
LOT 23 PACKAGE A1

HVAC LEGEND								3.	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	FLOOR SUPPLY AIR GRILLE		8" 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		 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.	Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name MINNISALE HOMES CORP. BRAMPTON, ONTARIO			Date OCT/2018	
LOT 23 MILLWOOD 2			Scale 3/16" = 1'-0"	
2654 sqft			BCIN# 19669	
			LO# 80552	



CITY OF
BUILDING
REVIEWED
NOV 26 2018
ATTACHED NOTES ARE PART
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WUB

CSA-F280-12

LOT 23

PACKAGE A1

I MICHAEL OROURKE HAVE REVIEWED
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C, 32.3 OF THE
BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, OAC (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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GREENPARK HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	OCT/2018
MINNISALE HOMES CORP. BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
LOT 23 MILLWOOD 2 2654 sqft			BCIN# 19669	LO# 80552