

SITE NAME: MINNISALE HOMES CORP

LOT 29

DATE: Oct-18

WINTER NATURAL AIR CHANGE RATE 0.364

HEAT LOSS AT °F. 74

CSA-F280-12

BUILDER: GREENPARK HOMES

TYPE: MILLWOOD 2

GFA: 2664

LO# 28293

SUMMER NATURAL AIR CHANGE RATE 0.115

HEAT GAIN AT °F. 11

SB-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-4	WIC-2	ENS-2
			34	22	10	26	37	11	6	0	10
			10	9	9	9	10	9	9	9	9
FACTORS											
GRS.WALL AREA	LOSS	GAIN	340	198	90	234	370	99	54	0	90
GLAZING	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS
NORTH	28.8	15.5	0	0	0	0	0	0	0	0	0
EAST	28.8	41.9	0	0	0	0	0	0	0	0	0
SOUTH	28.8	24.4	0	0	0	10	268	244	0	0	0
WEST	28.8	41.9	32	645	1314	12	249	493	0	0	0
SKYLT.	36.4	190.7	0	0	0	0	0	0	0	0	0
DOORS	24.7	3.7	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.4	0.6	308	1342	199	176	767	114	90	392	58
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	280	351	156	120	150	67	120	150	67
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS			0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS			2358		1274	542	1966	2455	964	467	823
SUB TOTAL HT GAIN			1669		917	125	1112	1625	495	269	322
LEVEL FACTOR / MULTIPLIER	0.20	0.27	0.20	0.27	0.20	0.27	0.20	0.27	0.20	0.27	0.20
AIR CHANGE HEAT LOSS			644		376	148	837	682	264	128	225
AIR CHANGE HEAT GAIN			127		70	9	84	123	38	20	24
DUCT LOSS			0		0	0	250	0	0	0	105
DUCT GAIN			0		0	0	233	0	0	0	35
HEAT GAIN PEOPLE	240	2	480	0	0	0	1	240	1	240	0
HEAT GAIN APPLIANCES/LIGHTS			896	0	0	0	896	896	896	896	0
TOTAL HT LOSS BTU/H			3092		1750	691	2753	3177	1228	594	1153
TOTAL HT GAIN x 1.3 BTU/H			4123		1283	175	3336	3749	2174	377	496

ROOM USE	EXP. WALL	CLG. HT.	LIV	KT/PM	ENS-3	WVR	FOY	MUD	WOD	BAS
			38	78	8	12	27	17	50	154
			10	10	9	11	10	11	9	9
FACTORS										
GRS.WALL AREA	LOSS	GAIN	380	780	72	132	270	187	450	1224
GLAZING	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN
NORTH	28.8	15.5	0	0	0	0	0	0	0	0
EAST	28.8	41.9	0	0	0	0	0	0	0	0
SOUTH	28.8	24.4	40	831	976	0	0	0	0	0
WEST	28.8	41.9	0	0	0	0	0	0	0	0
SKYLT.	36.4	190.7	0	0	0	0	0	0	0	0
DOORS	24.7	3.7	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.4	0.6	340	1481	220	648	2398	484	62	270
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	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			2312		5863	957	739	2087	1221	181
SUB TOTAL HT GAIN			1195		3216	569	323	537	1221	181
LEVEL FACTOR / MULTIPLIER	0.30	0.44	0.30	0.44	0.30	0.44	0.30	0.44	0.30	0.44
AIR CHANGE HEAT LOSS			1008		2217	262	322	910	532	632
AIR CHANGE HEAT GAIN			91		267	43	24	41	14	14
DUCT LOSS			0		0	122	0	0	0	0
DUCT GAIN			0		0	61	0	0	0	0
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS			896	896	896	896	896	896	896	896
TOTAL HT LOSS BTU/H			3321		7309	1340	1062	2997	1763	14832
TOTAL HT GAIN x 1.3 BTU/H			2837		4083	876	451	751	253	1762

TOTAL HEAT GAIN BTU/H: 29513

TONS: 2.46

LOSS DUE TO VENTILATION LOAD BTU/H: 1593

STRUCTURAL HEAT LOSS: 48407

TOTAL COMBINED HEAT LOSS BTU/H: 60090

SITE NAME: MINNISALE HOMES CORP
BUILDER: GREENPARK HOMES

LOT 29
TYPE: MILLWOOD 2

DATE: Oct-18

GFA: 2654 LO# 80393

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 48,407 TOTAL HEAT GAIN 29,277
AIR FLOW RATE CFM 23.36 AIR FLOW RATE CFM 38.63

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 @ 5°F E.S.P.

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	13	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.

plenum pressure s/a 0.18 r/a pressure 0.17
max s/a dif press. loss 0.03 r/a grille press. Loss 0.02
min adjusted pressure s/a 0.15 adjusted pressure r/a 0.15

TEMPERATURE RISE 47 °F

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	ENS	WIC	BED-2	BED-3	BED-4	ENS-4	BED-2	BED-3	MBR	ENS-2	LIV	WIC-2	KT/FM	KT/FM	KT/FM	ENS-3	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.50	1.75	0.69	1.38	1.59	1.23	0.59	1.38	1.59	1.50	1.15	3.32	0.31	2.43	2.43	2.43	1.34	1.06	3.00	1.75	3.99	3.99	3.99	3.99
CFM PER RUN HEAT	35	41	16	32	37	29	14	32	37	35	27	78	7	57	57	57	31	25	70	41	93	93	93	93
RM GAIN MBH	2.06	1.28	0.17	1.67	1.87	2.17	0.38	1.67	1.87	2.06	0.50	2.84	0.09	2.03	2.03	2.03	0.88	0.45	0.75	0.25	0.56	0.56	0.56	0.56
CFM PER RUN COOLING	80	50	7	64	72	84	15	64	72	80	19	110	3	78	78	78	34	17	29	10	22	22	22	22
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.15	0.17	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	40	46	33	15	37	47	47	45	38	15	30	48	44	49	39	39	29	32	39	39	20	10
EQUIVALENT LENGTH	190	170	130	140	180	160	110	140	190	150	140	120	170	130	110	140	130	150	140	170	150	170	110	180
TOTAL EFFECTIVE LENGTH	245	224	170	186	213	175	147	187	237	195	178	135	200	178	154	189	169	189	189	202	189	209	130	170
ADJUSTED PRESSURE	0.07	0.08	0.1	0.09	0.08	0.09	0.12	0.09	0.07	0.09	0.1	0.11	0.09	0.1	0.11	0.09	0.1	0.09	0.1	0.09	0.08	0.12	0.1	0.1
ROUND DUCT SIZE	5	5	4	5	5	5	4	5	5	5	4	6	4	5	5	5	4	4	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	257	301	184	235	272	213	161	235	272	257	310	398	80	419	419	419	356	287	514	470	474	474	474	474
COOLING VELOCITY (ft/min)	587	367	80	470	529	617	172	470	529	587	218	561	34	573	573	573	390	195	213	115	112	112	112	112
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	B	B	D	C	B	D	D	C	A	D	C	D	A	A	A	D	B	C	B	A	A	C	B

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	ENS	WIC	BED-2	BED-3	BED-4	ENS-4	BED-2	BED-3	MBR	ENS-2	LIV	WIC-2	KT/FM	KT/FM	KT/FM	ENS-3	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.50	1.75	0.69	1.38	1.59	1.23	0.59	1.38	1.59	1.50	1.15	3.32	0.31	2.43	2.43	2.43	1.34	1.06	3.00	1.75	3.99	3.99	3.99	3.99
CFM PER RUN HEAT	35	41	16	32	37	29	14	32	37	35	27	78	7	57	57	57	31	25	70	41	93	93	93	93
RM GAIN MBH	2.06	1.28	0.17	1.67	1.87	2.17	0.38	1.67	1.87	2.06	0.50	2.84	0.09	2.03	2.03	2.03	0.88	0.45	0.75	0.25	0.56	0.56	0.56	0.56
CFM PER RUN COOLING	80	50	7	64	72	84	15	64	72	80	19	110	3	78	78	78	34	17	29	10	22	22	22	22
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.15	0.17	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	40	46	33	15	37	47	47	45	38	15	30	48	44	49	39	39	29	32	39	39	20	10
EQUIVALENT LENGTH	190	170	130	140	180	160	110	140	190	150	140	120	170	130	110	140	130	150	140	170	150	170	110	180
TOTAL EFFECTIVE LENGTH	245	224	170	186	213	175	147	187	237	195	178	135	200	178	154	189	169	189	189	202	189	209	130	170
ADJUSTED PRESSURE	0.07	0.08	0.1	0.09	0.08	0.09	0.12	0.09	0.07	0.09	0.1	0.11	0.09	0.1	0.11	0.09	0.1	0.09	0.1	0.09	0.08	0.12	0.1	0.1
ROUND DUCT SIZE	5	5	4	5	5	5	4	5	5	5	4	6	4	5	5	5	4	4	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	257	301	184	235	272	213	161	235	272	257	310	398	80	419	419	419	356	287	514	470	474	474	474	474
COOLING VELOCITY (ft/min)	587	367	80	470	529	617	172	470	529	587	218	561	34	573	573	573	390	195	213	115	112	112	112	112
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	B	B	D	C	B	D	D	C	A	D	C	D	A	A	A	D	B	C	B	A	A	C	B

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. HANNA

NOV 23 2018

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

SUPPLY AIR TRUNK SIZE

TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	427	0.07	10.5	14	8	TRUNK G	0	0.00	0	0	8
TRUNK B	672	0.07	12.5	18	8	TRUNK H	0	0.00	0	0	8
TRUNK C	315	0.07	9.4	10	8	TRUNK I	0	0.00	0	0	8
TRUNK D	458	0.07	10.8	14	8	TRUNK J	0	0.00	0	0	8
TRUNK E	0	0.00	0	0	8	TRUNK K	0	0.00	0	0	8
TRUNK F	0	0.00	0	0	8	TRUNK L	0	0.00	0	0	8

RETURN AIR TRUNK SIZE

TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK O	0	0.07	0	0	8	TRUNK X	1131	0.07	15.2	30	8
TRUNK P	0	0.07	0	0	8	TRUNK Y	300	0.07	9.2	10	8
TRUNK Q	0	0.07	0	0	8	TRUNK Z	0	0.07	0	0	8
TRUNK R	0	0.07	0	0	8	DROP	1131	0.07	15.2	24	10
TRUNK S	0	0.07	0	0	8						
TRUNK T	0	0.07	0	0	8						
TRUNK U	0	0.07	0	0	8						
TRUNK V	0	0.07	0	0	8						
TRUNK W	0	0.07	0	0	8						
TRUNK X	1131	0.07	15.2	30	8						
TRUNK Y	300	0.07	9.2	10	8						
TRUNK Z	0	0.07	0	0	8						
DROP	1131	0.07	15.2	24	10						

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
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	155	95	95	155	310	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
56	43	42	48	38	15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
145	135	175	175	145	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
201	178	217	223	183	150	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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	14.80
7	7	6	6	7	8.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
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: MILLWOOD 2
 SITE NAME: MINNISALE HOMES CORP

 LO # 80393
 LOT 29

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	6	@ 10.6 cfm	63.6 cfm
Other Rooms	4	@ 10.6 cfm	42.4 cfm
Table 9.32.3.A.	TOTAL		180.2 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 9.32.3.6.	
Total Ventilation Capacity	180.2 cfm
Less Principal Ventil. Capacity	79.5 cfm
Required Supplemental Capacity	100.7 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		cfm	HVI	Sones
Location	Model			
ENS	FV-05-11VK1	50	☒	0.3
ENS-4	FV-05-11VK1	50	☒	0.3
ENS-2	FV-05-11VK1	50	☒	0.3
WIR	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:	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, 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#:	80393	Model:	MILLWOOD 2	Builder: GREENPARK HOMES																																																								
				Date: 19/10/2018																																																								
Volume Calculation			Air Change & Delta T Data																																																									
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.354 x 278.18 x 41 °C x 1.2 = 4875 W = 16633 Btu/h			$HG_{sairb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ 0.115 x 278.18 x 6 °C x 1.2 = 235 W = 802 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 CFM x 74 °F x 1.08 x 0.25 = 1593 Btu/h			$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 11 °F x 1.08 x 0.25 = 236 Btu/h																																																									
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*HLairbv = Air leakage heat loss + ventilation heat loss

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



HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: MILLWOOD 2	LOT 29	BUILDER: GREENPARK HOMES
SFQT: 2654	LO# 80393	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:	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):	35366.0	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:	154.0 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
NOV 23 2018
ATTACHED NOTES ARE PART
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**Compliance Package
A1**

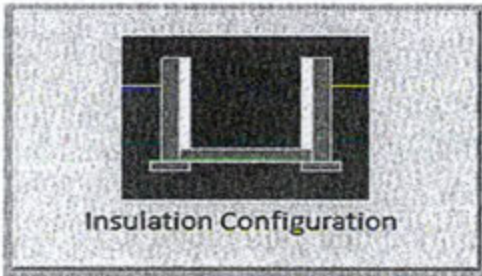
Nominal	Min. Eff.
60	59.22
31	27.65
31	29.80
22	17.03
20 ci	21.12
-	-
10	10
10	11.13
0.28	-
0.49	-
0.96	-
75%	-
0.8	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

Michael O'Rourke

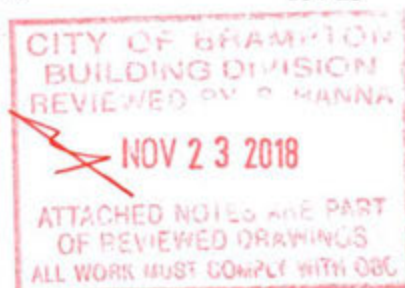
Residential Foundation Thermal Load Calculator

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):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.4	
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):		1537

TYPE: MILLWOOD 2
LO# 80393

LOT 29



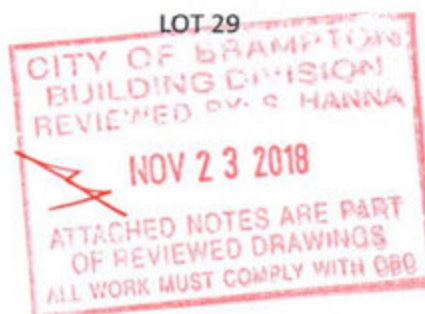
Air Infiltration Residential Load Calculator

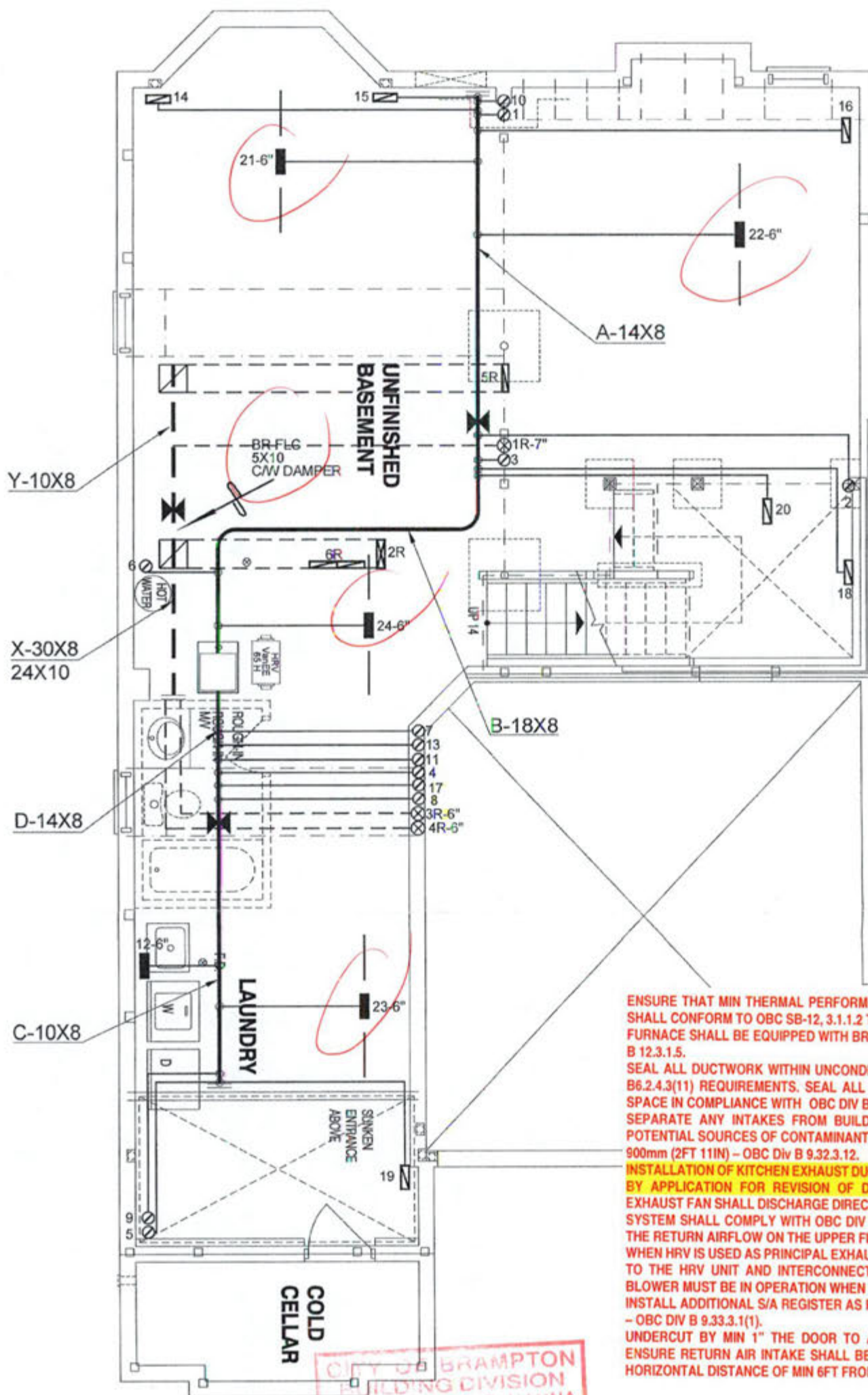
Supplemental tool for CAN/CSA-F280

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):	1001.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH) ✓			
Custom BDT Data:	ELA @ 10 Pa. 3.57	1335.0 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):	0.354 ✓			
Cooling Air Leakage Rate (ACH/H):	0.115			

TYPE: MILLWOOD 2
LO# 80393

LOT-29





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

LOT 29
CSA-F280-12
PACKAGE A1

I MICHAEL O'BRIEN HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.5 OF THE BUILDING CODE.
Michael O'Brien
Michael O'Brien, B.Sc. 1989
HVAC DESIGNS LTD.

HVAC LEGEND						REVISIONS	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Date
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE	3.	
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	2.	
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	1.	
					REDUCER	No.	Description

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Client
GREENPARK HOMES
Project Name
MINNISALE HOMES CORP.
BRAMPTON, ONTARIO

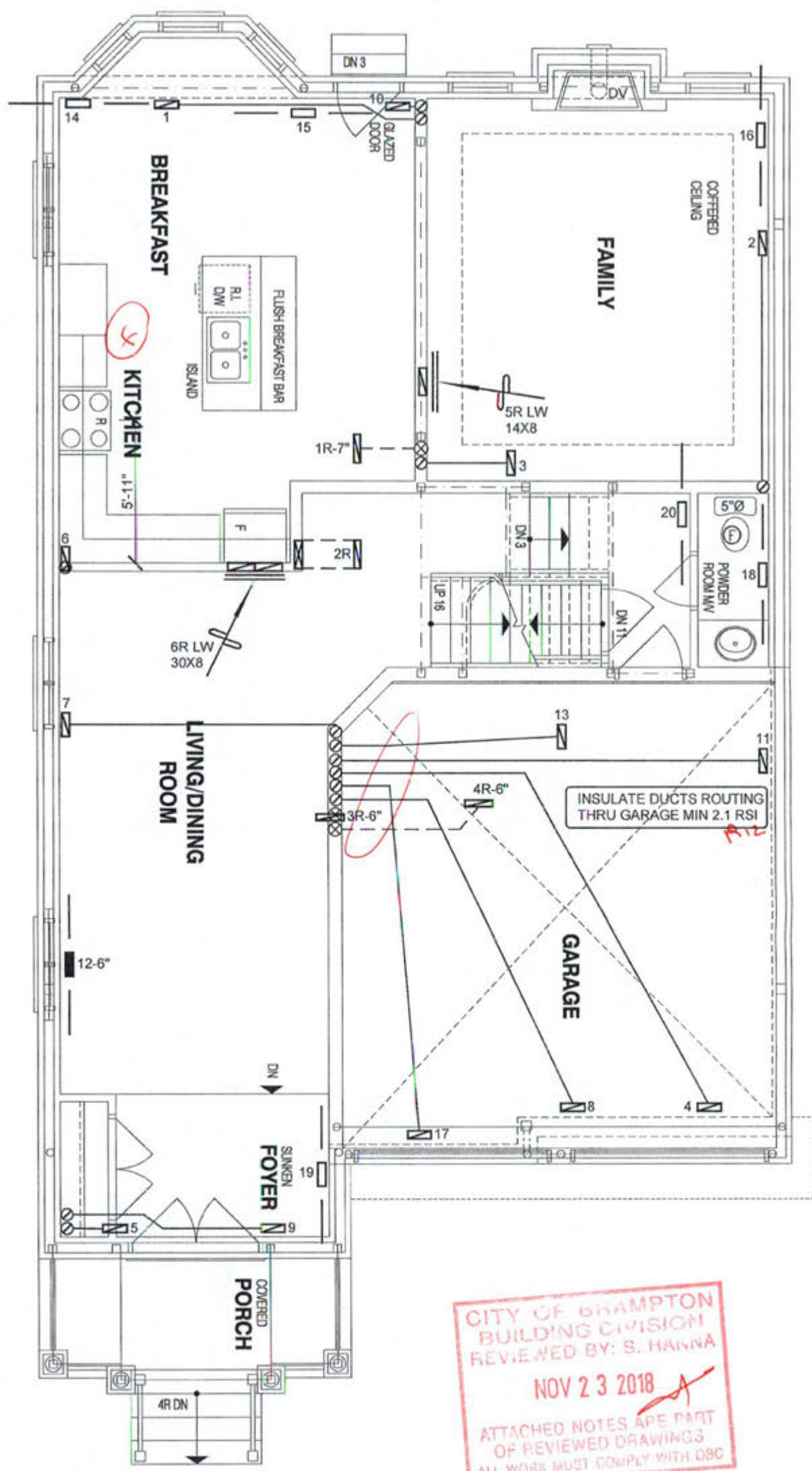
LOT 29
MILLWOOD 2 **2654 sqft**

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@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 50000 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS		
MAKE	GOODMAN	3RD FLOOR		
MODEL	GMEC960603BNA	2ND FLOOR	13	4
INPUT	60 MBTU/H	1ST FLOOR	7	2
OUTPUT	57.6 MBTU/H	BASEMENT	4	1
COOLING	2.5 TONS			
FAN SPEED	1131 cfm @ 0.5" w.g.			

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
OCT/2018
Scale
3/16" = 1'-0"
BCIN# 19669
LO# 80393



THIS INSTALLATION OF A GAS FIREPLACE IS REGULATED UNDER THE T.S.S.A. BY C.S.A. 8149.1 NATURAL GAS AND PROPANE INSTALLATION CODE CALL ENBRIDGE FOR INSPECTION AT 1-800-785-1314

CITY OF BRAMPTON
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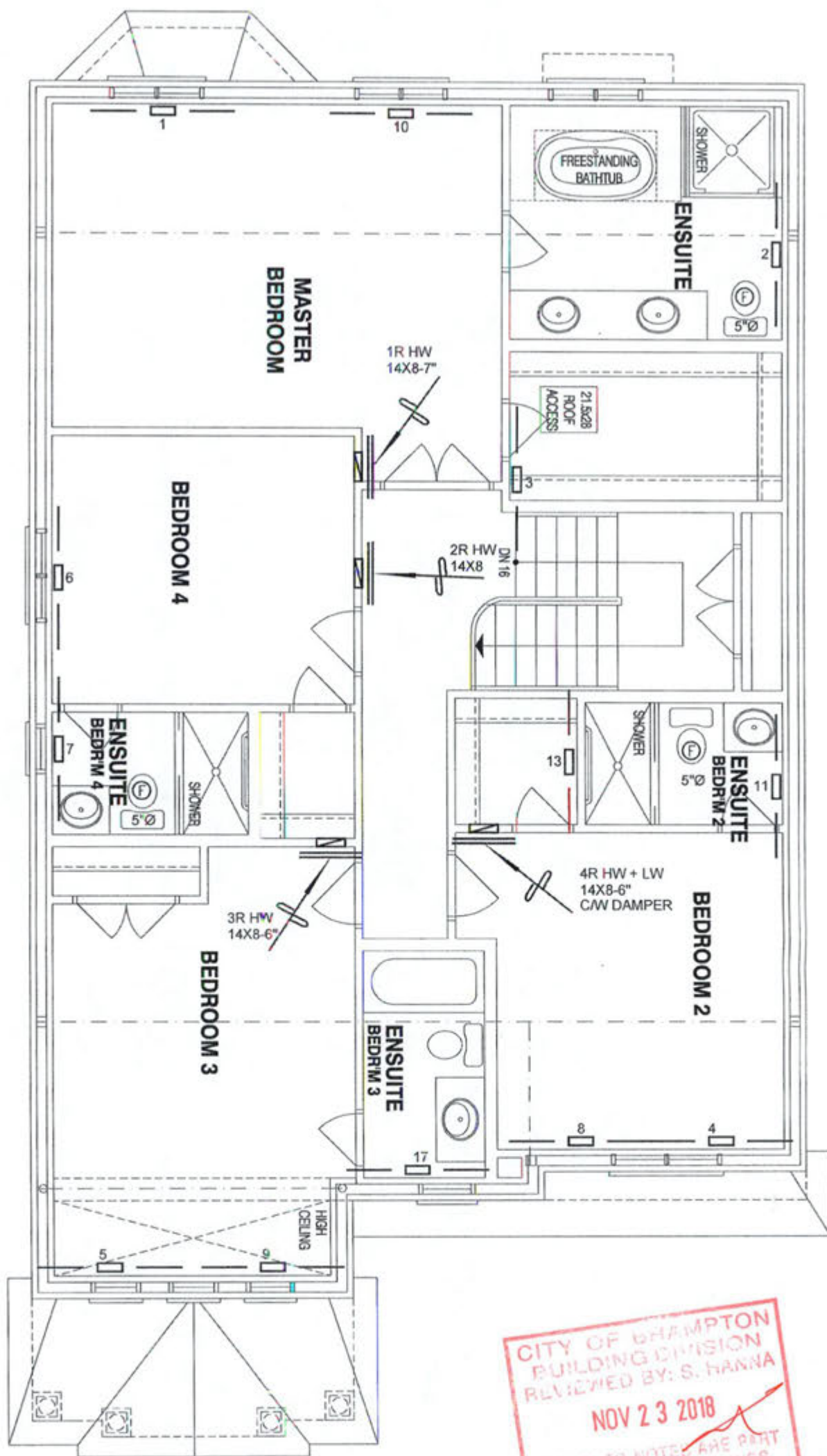
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CSA-F280-12
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Michael O'Brien, P.Eng. 1999
HVAC DESIGNS LTD.

HVAC LEGEND						REVISIONS	
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	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		RETURN AIR STACK ABOVE	1.	
					RETURN AIR STACK 2nd FLOOR	No.	Date
					FRA- FLOOR RETURN AIR GRILLE		
					REDUCER		

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Client		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title	
GREENPARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	
MINNISALE HOMES CORP. BRAMPTON, ONTARIO			OCT/2018	
LOT 29		Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.	Scale	
MILLWOOD 2			3/16" = 1'-0"	
2654 sqft		BCIN# 19669		
		LO# 80393		



CITY OF BRAMPTON
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LOT 29
CSA-F280-12
PACKAGE A1

I MICHAEL O'BROURKE HAVE REVIEWED
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C.3.2.3 OF THE
BUILDING CODE.
Michael O'Brourke
Michael O'Brourke, BCIN# 19669
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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Project Name MINNISALE HOMES CORP. BRAMPTON, ONTARIO	LOT 29 MILLWOOD 2 2654 sqft		Date OCT/2018 Scale 3/16" = 1'-0" BCIN# 19669 LO# 80393	