

SITE NAME: MINNISALE HOMES CORP			LOT 13			DATE: Oct-19			WINTER NATURAL AIR CHANGE RATE 0.328			HEAT LOSS ΔT °F. 74			CSA-P200-12		
BUILDER: GREENPARK HOMES			TYPE: GRANDBROOKE 1			GFA: 2312			SUMMER NATURAL AIR CHANGE RATE 0.108			HEAT GAIN ΔT °F. 11			SB-12 PACKAGE A1		
ROOM USE			MIR		ENS		WIC		BED-2		BED-3		BED-4		ENS-2		BATH
EXP. WALL			32		28		8		12		29		31		9		16
CLG. HT.			10		9		9		9		9		9		9		9
FACTORS																	
GRS.WALL AREA	LOSS	GAIN	320		226		46		108		261		279		81		135
GLAZING	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	32	665	1314	14	291	878	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	0	0	0
WEST	20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYL.T.	36.4	109.7	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	0	0	0	0	0	0
NET EXPOSED WALL	4.4	0.6	288	1255	186	211	919	136	45	196	29	92	401	89	211	919	136
NET EXPOSED SMT 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	0.5	252	316	140	136	170	76	75	94	42	192	241	107	189	226	100
NO ATTIC EXPOSED CLG	2.7	1.2	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	0	0	0	0	0	0	0	0	0
BA SEMENTICRAWL 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			2235		1381		290		974		2264		2431		626		975
SUB TOTAL HT GAIN				1649		787		71		557		2325		1268		288	200
LEVEL FACTOR / MULTIPLIER	0.20	0.24			0.20	0.24			0.20	0.24			0.20	0.24			0.20
AIR CHANGE HEAT LOSS			534		330		69		233		541		581		149		233
AIR CHANGE HEAT GAIN				111		53		5		38		168		82		20	14
DUCT LOSS			0		0		0		0		0		301		0		121
DUCT GAIN			0		0		0		0		0		213		0		21
HEAT GAIN PEOPLE	240		2		480		0		0		1		240		0		0
HEAT GAIN APPLIANCE/LIGHTS					604		0		0		604		604		0		0
TOTAL HT LOSS BTU/H			2769		1710		359		1208		2805		3313		775		1229
TOTAL HT GAIN ± 1.3 BTU/H			3686		1092		98		1870		4325		3051		401		306

ROOM USE			LV/DN		KT/PM				W/R		FOY						WUB	BA5
EXP. WALL			36		92				12		18						13	145
CLG. HT.			10		10				10		11						9	9
FACTORS																		
GRS.WALL AREA	LOSS	GAIN	360		920				130		198						117	870
GLAZING	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	0	70	1454	2873	0	0	0						0	0
SOUTH	20.8	24.4	22	457	837	10	208	244	0	0	0						0	0
WEST	20.8	41.0	0	0	0	0	0	0	0	0	0						0	0
SKYL.T.	36.4	109.7	0	0	0	0	0	0	0	0	0						0	0
DOORS	24.7	3.7	0	0	0	20	493	73	0	0	0						0	0
NET EXPOSED WALL	4.4	0.6	338	1473	218	820	3573	530	130	506	84	152	662	98	144	20	493	73
NET EXPOSED SMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0						97	423
EXPOSED CLG	1.3	0.5	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
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0						0	0
BA SEMENTICRAWL HEAT LOSS			0		0		0		0		0						0	0
SLAB ON GRADE HEAT LOSS			0		0		0		0		0						0	0
SUBTOTAL HT LOSS			1930		5755				558		1773						89	1005
SUB TOTAL HT GAIN				755		3732			84		491						136	7222
LEVEL FACTOR / MULTIPLIER	0.30	0.40			0.30	0.40			0.30	0.40								0.50
AIR CHANGE HEAT LOSS			771		2289				226		708							6674
AIR CHANGE HEAT GAIN				51		254			6		33							54
DUCT LOSS			0		0		0		0		0							0
DUCT GAIN			0		0		0		0		0							0
HEAT GAIN PEOPLE	240		0		0		0		0		0						0	0
HEAT GAIN APPLIANCE/LIGHTS					604		604		0		0						0	0
TOTAL HT LOSS BTU/H			2791		8054				793		2481						1005	13896
TOTAL HT GAIN ± 1.3 BTU/H			1833		5968				117		681						176	936

CITY OF BRAMPTON
BUILDING DIVISION
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NOV 28 2018

H V A C
BY
JOAN LIN

TOTAL HEAT GAIN BTU/H: 24774

TONS: 2.06

LOSS DUE TO VENTILATION LOAD BTU/H: 1583

STRUCTURAL HEAT LOSS: 43197

TOTAL COMBINED HEAT LOSS BTU/H: 44790

SITE NAME: MINNISALE HOMES CORP
 BUILDER: GREENPARK HOMES

 LOT 13
 TYPE: GRANDBROOKE 1

DATE: Oct-18

GFA: 2312 LO# 80554

 HEATING CFM 1131 COOLING CFM 1131
 TOTAL HEAT LOSS 43,197 TOTAL HEAT GAIN 24,538
 AIR FLOW RATE CFM 26.18 AIR FLOW RATE CFM 46.09

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

 #GOODMAN
 GMEC980603BNA 60
 FAN SPEED LOW
 MEDLOW
 MEDIUM
 MEDIUM HIGH
 HIGH 1131

 AFUE = 98 %
 INPUT (BTUH) = 60,000
 OUTPUT (BTUH) = 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.

 plenum pressure s/a 0.18
 max s/a diff 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

RUN #	1	2	3	4	5	6	7	8	9	10	12	14	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	BED-4	BED-3	MBR	LV/DN	KT/FM	KT/FM	BATH	W/R	FOY	KT/FM	BAS	BAS	BAS	BAS
RM LOSS MBH	1.38	1.71	0.36	1.21	1.40	1.66	0.78	1.66	1.40	1.38	2.70	2.68	2.68	1.33	0.79	2.48	2.68	3.73	3.73	3.73	3.73
CFM PER RUN HEAT	38	45	9	32	37	43	20	43	37	36	71	70	70	35	21	85	70	98	98	98	98
RM GAIN MBH	1.84	1.09	0.10	1.87	2.16	1.53	0.40	1.53	2.16	1.84	1.83	1.99	1.99	0.31	0.12	0.88	1.99	0.28	0.28	0.28	0.28
CFM PER RUN COOLING	85	50	5	86	100	70	18	70	100	85	84	92	92	14	5	31	92	13	13	13	13
ADJUSTED PRESSURE	0.16	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	70	57	13	8	52	51	12	50	46	36	7	33	45	21	24	34	40	58	20	19	15
EQUIVALENT LENGTH	150	170	190	170	150	150	140	140	140	130	120	140	160	170	140	140	150	160	140	170	130
TOTAL EFFECTIVE LENGTH	220	227	203	176	202	201	152	190	186	166	127	173	205	191	164	174	190	218	160	189	145
ADJUSTED PRESSURE	0.07	0.08	0.08	0.09	0.08	0.09	0.11	0.09	0.09	0.1	0.13	0.09	0.08	0.09	0.1	0.1	0.09	0.07	0.1	0.09	0.11
ROUND DUCT SIZE	8	5	4	6	6	5	4	5	6	6	6	6	6	4	4	5	6	6	6	6	6
HEATING VELOCITY (ft/min)	184	330	103	163	189	316	229	316	189	184	362	357	357	402	241	477	357	500	500	500	500
COOLING VELOCITY (ft/min)	433	367	57	438	510	514	207	514	510	433	428	469	469	181	57	228	469	66	66	66	66
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10
TRUNK	B	B	B	B	D	C	C	C	D	A	D	A	A	D	D	A	A	B	C	B	B

RUN #	1	2	3	4	5	6	7	8	9	10	12	14	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	BED-4	BED-3	MBR	LV/DN	KT/FM	KT/FM	BATH	W/R	FOY	KT/FM	BAS	BAS	BAS	BAS
RM LOSS MBH	1.38	1.71	0.36	1.21	1.40	1.66	0.78	1.66	1.40	1.38	2.70	2.68	2.68	1.33	0.79	2.48	2.68	3.73	3.73	3.73	3.73
CFM PER RUN HEAT	38	45	9	32	37	43	20	43	37	36	71	70	70	35	21	85	70	98	98	98	98
RM GAIN MBH	1.84	1.09	0.10	1.87	2.16	1.53	0.40	1.53	2.16	1.84	1.83	1.99	1.99	0.31	0.12	0.88	1.99	0.28	0.28	0.28	0.28
CFM PER RUN COOLING	85	50	5	86	100	70	18	70	100	85	84	92	92	14	5	31	92	13	13	13	13
ADJUSTED PRESSURE	0.16	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	70	57	13	8	52	51	12	50	46	36	7	33	45	21	24	34	40	58	20	19	15
EQUIVALENT LENGTH	150	170	190	170	150	150	140	140	140	130	120	140	160	170	140	140	150	160	140	170	130
TOTAL EFFECTIVE LENGTH	220	227	203	176	202	201	152	190	186	166	127	173	205	191	164	174	190	218	160	189	145
ADJUSTED PRESSURE	0.07	0.08	0.08	0.09	0.08	0.09	0.11	0.09	0.09	0.1	0.13	0.09	0.08	0.09	0.1	0.1	0.09	0.07	0.1	0.09	0.11
ROUND DUCT SIZE	8	5	4	6	6	5	4	5	6	6	6	6	6	4	4	5	6	6	6	6	6
HEATING VELOCITY (ft/min)	184	330	103	163	189	316	229	316	189	184	362	357	357	402	241	477	357	500	500	500	500
COOLING VELOCITY (ft/min)	433	367	57	438	510	514	207	514	510	433	428	469	469	181	57	228	469	66	66	66	66
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10
TRUNK	B	B	B	B	D	C	C	C	D	A	D	A	A	D	D	A	A	B	C	B	B

SUPPLY AIR TRUNK SIZE

TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	344	0.07	9.7	12	x 8 516
TRUNK B	862	0.07	12.4	18	x 8 662
TRUNK C	260	0.09	8.2	8	x 8 585
TRUNK D	470	0.08	10.6	14	x 8 804
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	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK O	0	0.06	0	0	x 8 0
TRUNK P	0	0.06	0	0	x 8 0
TRUNK Q	0	0.06	0	0	x 8 0
TRUNK R	0	0.06	0	0	x 8 0
TRUNK S	0	0.06	0	0	x 8 0
TRUNK T	0	0.06	0	0	x 8 0
TRUNK U	0	0.06	0	0	x 8 0
TRUNK V	0	0.06	0	0	x 8 0
TRUNK W	0	0.06	0	0	x 8 0
TRUNK X	951	0.06	14.8	26	x 8 658
TRUNK Y	270	0.06	9.2	10	x 8 486
TRUNK Z	0	0.06	0	0	x 8 0
DROP	1131	0.06	15.8	24	x 10 679

RETURN AIR

1	2	3	4	5	6	7	8	9	10	12	14	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
125	175	95	85	145	315	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
72	39	46	61	29	17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
175	175	175	175	145	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
247	214	221	236	174	152	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0.06	0.07	0.07	0.06	0.09	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
6.9	7.5	8	8	8.6	8.6	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
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

TYPE: GRANDBROOKE 1
SITE NAME: MINNISALE HOMES CORP

LO #: 80554
LOT 13

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	3 @ 10.6 cfm	31.8 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	189 cfm	
Less Principal Ventil. Capacity	79.5 cfm	
Required Supplemental Capacity	110 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	CFM	HVI	Sones
Location	Model				
ENS	FV-05-11VK1		50	☒	0.3
ENS-2	FV-05-11VK1		50	☒	0.3
BATH	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	☒ HVI Approved	
@ 32 deg F (0 deg C)		

LOCATION OF INSTALLATION	
Lot:	Concession
Township:	Plan:
Address:	
Roll #:	
CITY OF BRAMPTON BUILDING DIVISION REVIEWED	
NOV 28 2018	
HVAC BY JOAN LIN	
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

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

LO#: 80554

Model: GRANDBROOKE 1

Builder: GREENPARK HOMES

Date: 10/31/2018

Volume Calculation
House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1016	9	9144
First	1016	10	10160
Second	1296	9	11664
Third	0	9	0
Fourth	0	9	0
Total:			30,968.0 ft³
Total:			876.9 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.325
SUMMER NATURAL AIR CHANGE RATE	0.106

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

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

$$0.325 \times 243.59 \times 41^\circ\text{C} \times 1.2 = 3912 \text{ W}$$

$$= 13348 \text{ Btu/h}$$

6.2.6 Sensible Gain due to Air Leakage

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

$$0.106 \times 243.59 \times 6^\circ\text{C} \times 1.2 = 188 \text{ W}$$

$$= 643 \text{ Btu/h}$$

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)

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

Level	Level Factor (LF)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HL _{clevel})
1	0.5	13,348	8,227	0.811
2	0.3		10,024	0.399
3	0.2		11,176	0.239
4	0		0	0.000
5	0		0	0.000

*HLairbv = Air leakage heat loss + ventilation heat loss

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

**CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED
NOV 28 2018
HVAC
BY
JOAN LIN**

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: GRANDBROOKE 1	LOT 13	BUILDER: GREENPARK HOMES
SFQT: 2312	LO# 80554	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 (ft ³):	30968.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 53.0 ft	WIDTH: 26.0 ft	EXPOSED PERIMETER:	145.0 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

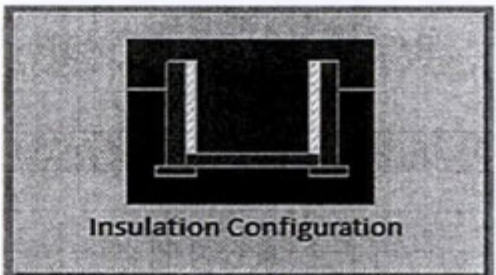
**CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED****NOV 28 2018****H V A C
BY
JOAN LIN****Compliance Package
A1**

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

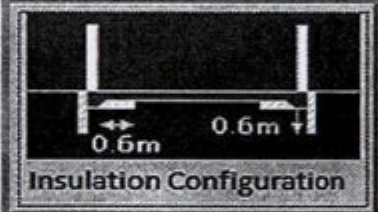
Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	16.2	 Insulation Configuration
Floor Width (m):	7.9	
Exposed Perimeter (m):	44.2	
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	CITY OF BRAMPTON BUILDING DIVISION REVIEWED NOV 28 2018 H V A C BY JOAN LIN
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1419

TYPE: GRANDBROOKE 1
LO# 80554

LOT 13

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):	0.3	 Insulation Configuration
Width (m):	3.7	
Exposed Perimeter (m):	4.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		26

TYPE: GRANDBROOKE 1
LO# 80554

LOT 13

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED
NOV 28 2018
HVAC
BY
JOAN LIN

Air Infiltration Residential Load Calculator

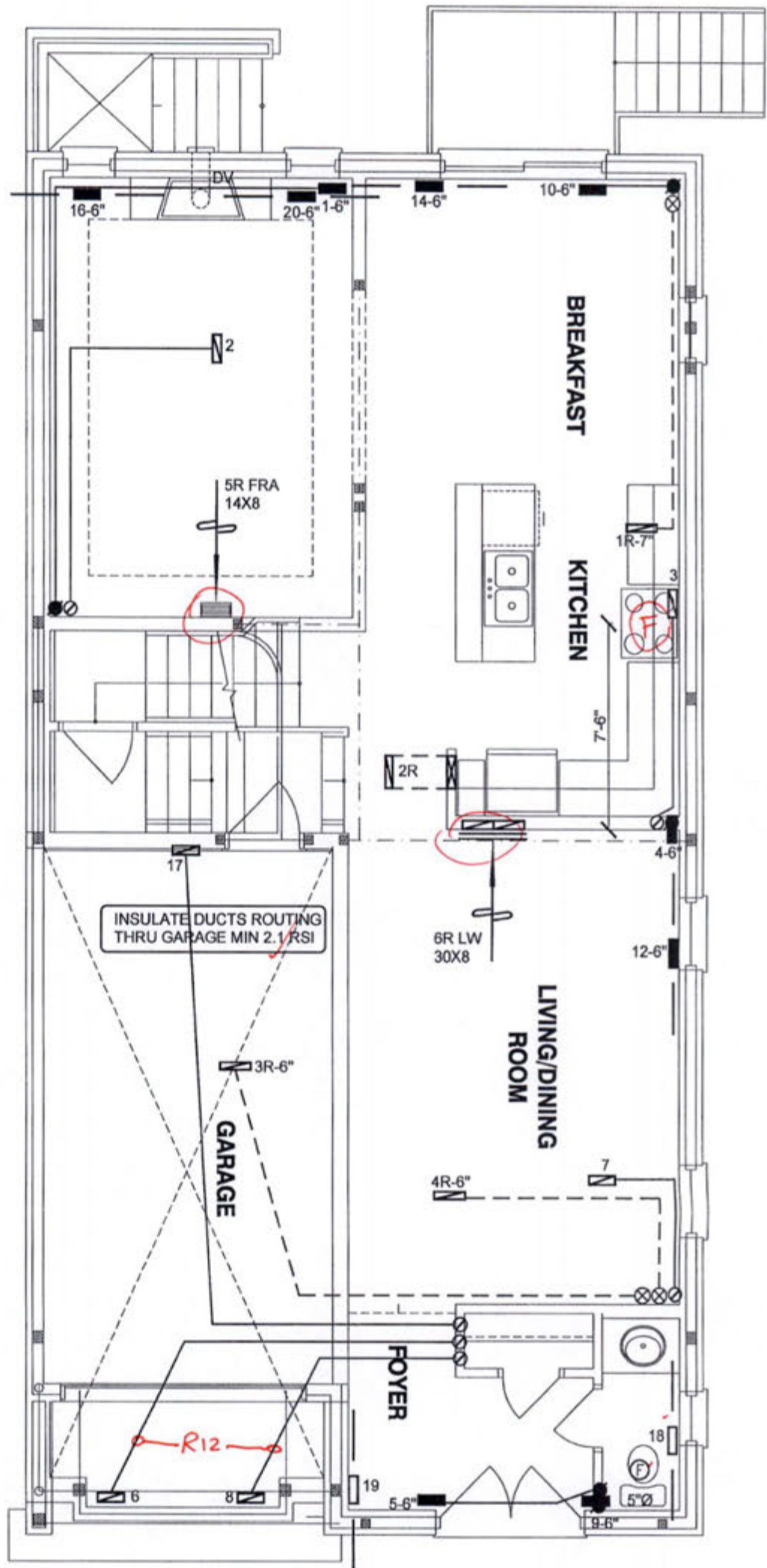
Supplemental tool for CAN/CSA-F280

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):	6.71		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	876.9		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1169.0 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):	0.325		
Cooling Air Leakage Rate (ACH/H):	0.106		

TYPE: GRANDBROOKE 1
LO# 80554

LOT 13

CITY OF BRAMPTON
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NOV 28 2018
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BY
JOAN LIN



THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH OBC DIV. B, 9.33.4 REQUIREMENTS.

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

MECHANICAL VENTILATION SHALL BE PROVIDED IN CONFORMANCE WITH OBC DIV. B, 9.32.3 REQUIREMENTS.

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED
NOV 28 2018
HVAC
BY
JOAN LIN

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

WUB
CSA-F280-12
LOT 13 PACKAGE A1

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

3.		
2.		
1.		
No.	Description	Date
REVISIONS		

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Client
GREENPARK HOMES
Project Name
MINNISALE HOMES CORP.
BRAMPTON, ONTARIO
LOT 13
GRANDBROOKE 1 2312 sqft

HVACDESIGNS 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.

Sheet Title
FIRST FLOOR
HEATING
LAYOUT
Date OCT/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 80554

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.

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED

NOV 28 2018

HVAC
BY
JOAN LIN

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

Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

WUB

CSA-F280-12

LOT 13 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 13
GRANDBROOKE 1 2312 sqft

HVACDESIGNS LTD.

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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

SECOND FLOOR
HEATING
LAYOUT

Date OCT/2018

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 80554