

SITE NAME: MINNISALE HOMES CORP

BUILDER: GREENPARK HOMES

TYPE: CLOVER 11A

GFA: 1880

DATE: Aug-18

LO# 79568

WINTER NATURAL AIR CHANGE RATE 0.357

HEAT LOSS AT °F. 74

CSA-F280-12

SUMMER NATURAL AIR CHANGE RATE 0.112

HEAT GAIN AT °F. 11

SB-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BATH
			31	9	0	11	39	9
			9	9	9	9	9	9
FACTORS								
GRS. WALL AREA	LOSS	GAIN	264	77	0	94	332	77
GLAZING	LOSS	GAIN						
NORTH	20.8	14.6	0	0	0	0	0	0
EAST	20.8	38.3	0	0	0	0	0	0
SOUTH	20.8	22.8	27	561	617	0	0	0
WEST	20.8	38.3	18	374	589	16	332	613
SKYLT.	36.4	100.7	0	0	0	0	0	0
DOORS	24.7	3.7	0	0	0	0	0	0
NET EXPOSED WALL	4.4	0.6	219	552	141	61	264	39
NET EXPOSED BMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	224	281	125	90	113	60
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS			0	0	0	0	0	0
SUBTOTAL HT LOSS			2168	709	79	1466	2627	904
SUB TOTAL HT GAIN				1572	702	36	1647	2196
LEVEL FACTOR / MULTIPLIER	0.20	0.26		0.20	0.26		0.20	0.26
AIR CHANGE HEAT LOSS			568	166	21	385	689	237
AIR CHANGE HEAT GAIN			82	36	2	54	114	33
DUCT LOSS			0	0	0	185	0	0
DUCT GAIN			0	0	0	184	0	0
HEAT GAIN PEOPLE	240	2	480	0	0	1	240	1
HEAT GAIN APPLIANCES/LIGHTS			499	0	0	499	499	499
TOTAL HT LOSS BTU/H			2736	895	100	2636	3315	1141
TOTAL HT GAIN x 1.3 BTU/H			3423	960	48	2632	3964	863

CITY OF BRAMPTON
 BUILDING DIVISION
 REVIEWED BY: S. HANNA
 JAN 10 2019
 ATTACHED NOTES ARE PART
 OF REVIEWED DRAWINGS
 ALL WORK MUST COMPLY WITH OBC

ROOM USE	EXP. WALL	CLG. HT.	LVDN	KT/FM	LAUN	WIR	FOY	MUD	WOO	BAS
			52	42	10	8	13	11	23	122
			12	12	9	10	10	10	9	9
FACTORS										
GRS. WALL AREA	LOSS	GAIN	624	504	85	80	136	110	207	809
GLAZING	LOSS	GAIN								
NORTH	20.8	14.6	0	0	0	0	0	0	0	0
EAST	20.8	38.3	28	582	1072	0	0	0	0	0
SOUTH	20.8	22.8	51	1060	1165	38	789	865	0	0
WEST	20.8	38.3	0	0	0	53	1101	2029	0	0
SKYLT.	36.4	100.7	0	0	0	0	0	0	0	0
DOORS	24.7	3.7	0	0	0	20	493	73	0	0
NET EXPOSED WALL	4.4	0.6	545	2375	352	393	1712	254	74	322
NET EXPOSED BMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	67	292
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	85	370
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	55	90
EXPOSED FLOOR	2.5	0.4	0	0	0	18	48	21	90	392
BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0	0	56	56
SLAB ON GRADE HEAT LOSS			0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS			4016	4144	737	562	1480	885	126	443
SUB TOTAL HT GAIN				2589	3245	382	340	219	56	228
LEVEL FACTOR / MULTIPLIER	0.30	0.31		0.30	0.31		0.30	0.31	64	801
AIR CHANGE HEAT LOSS			1236	1278	193	173	466	273	119	119
AIR CHANGE HEAT GAIN			135	169	20	16	11	7	0	0
DUCT LOSS			0	0	0	0	0	0	0	0
DUCT GAIN			0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	240	2	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS			499	499	499	499	499	499	0	0
TOTAL HT LOSS BTU/H			6254	5422	930	735	1936	1158	692	663
TOTAL HT GAIN x 1.3 BTU/H			4190	5087	1171	465	300	179	847	947

TOTAL HEAT GAIN BTU/H:

28100

TONS: 2.06

LOSS DUE TO VENTILATION LOAD BTU/H: 1274

STRUCTURAL HEAT LOSS: 37457

TOTAL COMBINED HEAT LOSS BTU/H: 34731



SITE NAME: MINNISSALE HOMES CORP
BUILDER: GREENPARK HOMES

TYPE: CLOVER 11A

DATE: Aug-18

GFA: 1880 LO# 79568

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 37,457 TOTAL HEAT GAIN 25,951
AIR FLOW RATE CFM 30.19 AIR FLOW RATE CFM 43.58

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° E.S.P.

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	10	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

TEMPERATURE RISE 47 °F

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-3	BATH	BED-2	MUD	MBR	LV/DN	LV/DN	KT/FM	KT/FM	KT/FM	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH	1.37	0.89	0.10	1.02	1.66	1.66	1.14	1.02	1.16	1.37	2.63	2.63	1.81	1.81	1.81	0.93	0.74	1.94	2.95	2.95	2.95	2.95
CFM PER RUN HEAT	41	27	3	31	50	50	34	31	35	41	79	79	55	55	55	28	22	58	89	89	89	89
RM GAIN MBH	1.77	1.02	0.05	1.36	2.07	2.07	0.91	1.36	0.18	1.77	2.20	2.20	1.79	1.79	1.79	1.19	0.49	0.30	0.42	0.42	0.42	0.42
CFM PER RUN COOLING	77	44	2	59	90	90	40	59	8	77	96	96	78	78	78	52	21	13	18	18	18	18
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	30	36	24	56	63	63	33	60	33	9	54	42	28	32	24	30	15	23	21	19	45	22
EQUIVALENT LENGTH	150	150	150	160	160	160	150	160	140	150	160	170	140	150	150	150	200	150	160	160	180	150
TOTAL EFFECTIVE LENGTH	180	186	174	216	223	213	183	220	173	159	214	212	168	182	174	180	215	173	181	179	225	172
ADJUSTED PRESSURE	0.1	0.09	0.1	0.08	0.07	0.08	0.09	0.08	0.1	0.11	0.08	0.08	0.1	0.09	0.1	0.1	0.08	0.1	0.09	0.09	0.07	0.09
ROUND DUCT SIZE	5	4	4	5	6	6	4	5	4	5	6	6	5	5	5	5	4	5	6	6	6	6
HEATING VELOCITY (ft/min)	301	310	34	228	255	255	390	228	402	301	403	403	404	404	404	206	252	426	454	454	454	454
COOLING VELOCITY (ft/min)	565	505	23	433	459	459	459	433	92	565	489	489	573	573	573	382	241	95	92	92	92	92
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	D	D	B	A	A	B	B	D	C	A	A	C	D	C	B	B	B	C	B	A	D

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

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. HANNA

JAN 10 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 347	0.07	9.8	12	x 8 521	TRUNK G 0	0.00	0	0	x 8 0
TRUNK B 640	0.07	12.3	18	x 8 640	TRUNK H 0	0.00	0	0	x 8 0
TRUNK C 281	0.09	8.5	10	x 8 506	TRUNK I 0	0.00	0	0	x 8 0
TRUNK D 209	0.09	7.6	8	x 8 470	TRUNK J 0	0.00	0	0	x 8 0
TRUNK E 490	0.09	10.4	12	x 8 735	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

1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	17	18	19	21	22	23	24
AIR VOLUME	135	115	115	385	135	75	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
ACTUAL DUCT LGH	46	55	63	28	49	55	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	225	235	260	185	255	255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	271	290	323	213	304	310	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.05	0.05	0.05	0.07	0.05	0.05	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	7.5	7	7	10.1	7.5	6	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
INLET GRILL SIZE	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	30	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TRUNK	STATIC	ROUND	RECT	VELOCITY
CFM	PRESS.	DUCT	DUCT	(ft/min)
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	32	x 8 636
TRUNK Y 520	0.05	12.3	18	x 8 520
TRUNK Z 365	0.05	10.8	14	x 8 469
DROP 1131	0.05	16.5	24	x 10 679

TYPE: CLOVER 11A
SITE NAME: MINNISSALE HOMES CORP

LO # 79568

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	2 @ 10.6 cfm	21.2 cfm
Kitchen & Bathrooms	4 @ 10.6 cfm	42.4 cfm
Other Rooms	2 @ 10.6 cfm	21.2 cfm
Table 9.32.3.A.	TOTAL	127.2 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	63.6	cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5
Total Ventilation Capacity	127.2	cfm
Less Principal Ventil. Capacity	63.6	cfm
Required Supplemental Capacity	63.6	cfm

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

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
63.6 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
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 #:	

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:	August-18

**CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. HANNA
JAN 10 2019
ATTACHED NOTES ARE PART
OF REVIEWED DRAWINGS
ALL WORK MUST COMPLY WITH OBC**

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#: 79568

Model: CLOVER 11A

Builder: GREENPARK HOMES

Date: 8/3/2018

Volume Calculation
House Volume

Level	Floor Area (ft ²)	Floor Height (ft)	Volume (ft ³)
Bsmt	872	8	7263.76
First	872	10	8650.24
Second	1008	8	8147.664
Third	0	9	0
Fourth	0	9	0
Total:			24,061.7 ft ³
Total:			681.4 m ³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.357
SUMMER NATURAL AIR CHANGE RATE	0.112

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

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

0.357 x 189.26 x 41 °C x 1.2 = 3339 W

= 11394 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

= 0.112 x 189.26 x 6 °C x 1.2 = 155 W

= 529 Btu/h

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

64 CFM x 74 °F x 1.08 x 0.25 = 1274 Btu/h

6.2.7 Sensible heat Gain due to Ventilation

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

64 CFM x 11 °F x 1.08 x 0.25 = 189 Btu/h

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

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

Level	Level Factor (LF)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{level})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)
1	0.5	11,394	6,102	0.934
2	0.3		11,087	0.308
3	0.2		8,689	0.262
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 HLairbv = 0

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. HANNA

JAN 10 2019

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

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** CLOVER 11A**SFQT:** 1880**LO#** 79568**BUILDER:** GREENPARK HOMES**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:	ATTACHED	# 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):	24061.7	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	5.5 ft
LENGTH: 48.0 ft	WIDTH: 24.0 ft	EXPOSED PERIMETER:	122.0 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 10 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	-

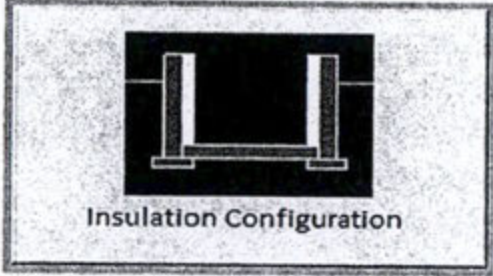
INDIVIDUAL BCIN: 19669

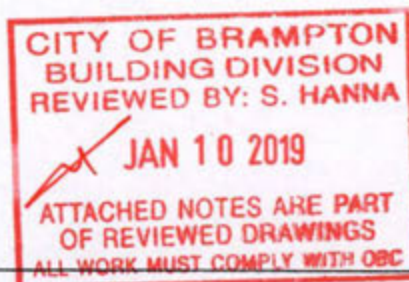
MICHAEL O'ROURKE

Michael O'Rourke

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

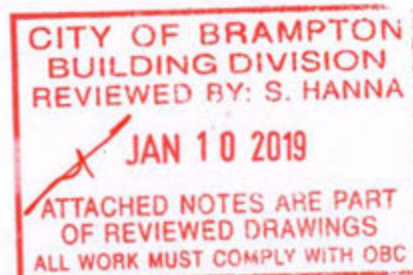
Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	14.6	 Insulation Configuration
Floor Width (m):	7.3	
Exposed Perimeter (m):	37.2	
Wall Height (m):	2.6	
Depth Below Grade (m):	1.68	
Window Area (m ²):	0.0	
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):		1204 /

TYPE: CLOVER 11A
LO# 79568

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):	7.32		
Building Configuration			
Type:	Semi		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	681.4		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH) ✓		
Custom BDT Data:	ELA @ 10 Pa.	908.3 cm ²	
	3.57	ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust	
	30.0	30.0	
Flue Size			
Flue #:	#1	#2	#3
Diameter (mm):	0	0	0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.357 ✓		
Cooling Air Leakage Rate (ACH/H):	0.112		

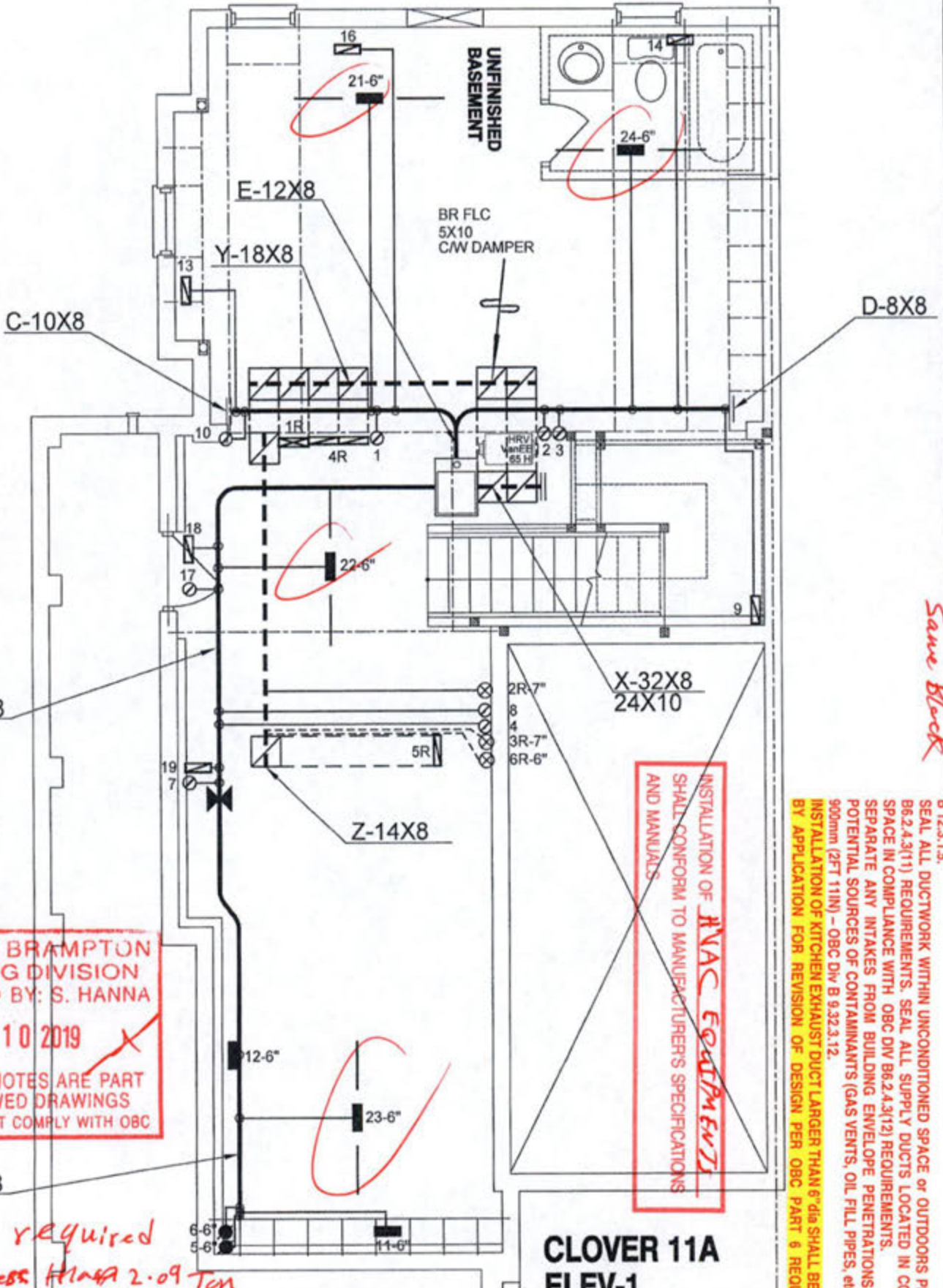
TYPE: CLOVER 11A
LO# 79568

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

WOD CONDITION

See wall section with the certified model
Same block

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



CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. HANNA
JAN 10 2019
ATTACHED NOTES ARE PART
OF REVIEWED DRAWINGS
ALL WORK MUST COMPLY WITH OBC

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

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(1) REQUIREMENTS. SEAL ALL SUPPLY DUCTS LOCATED IN UNCONDITIONED 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.

*A/C required
not less than 2.09 Ton

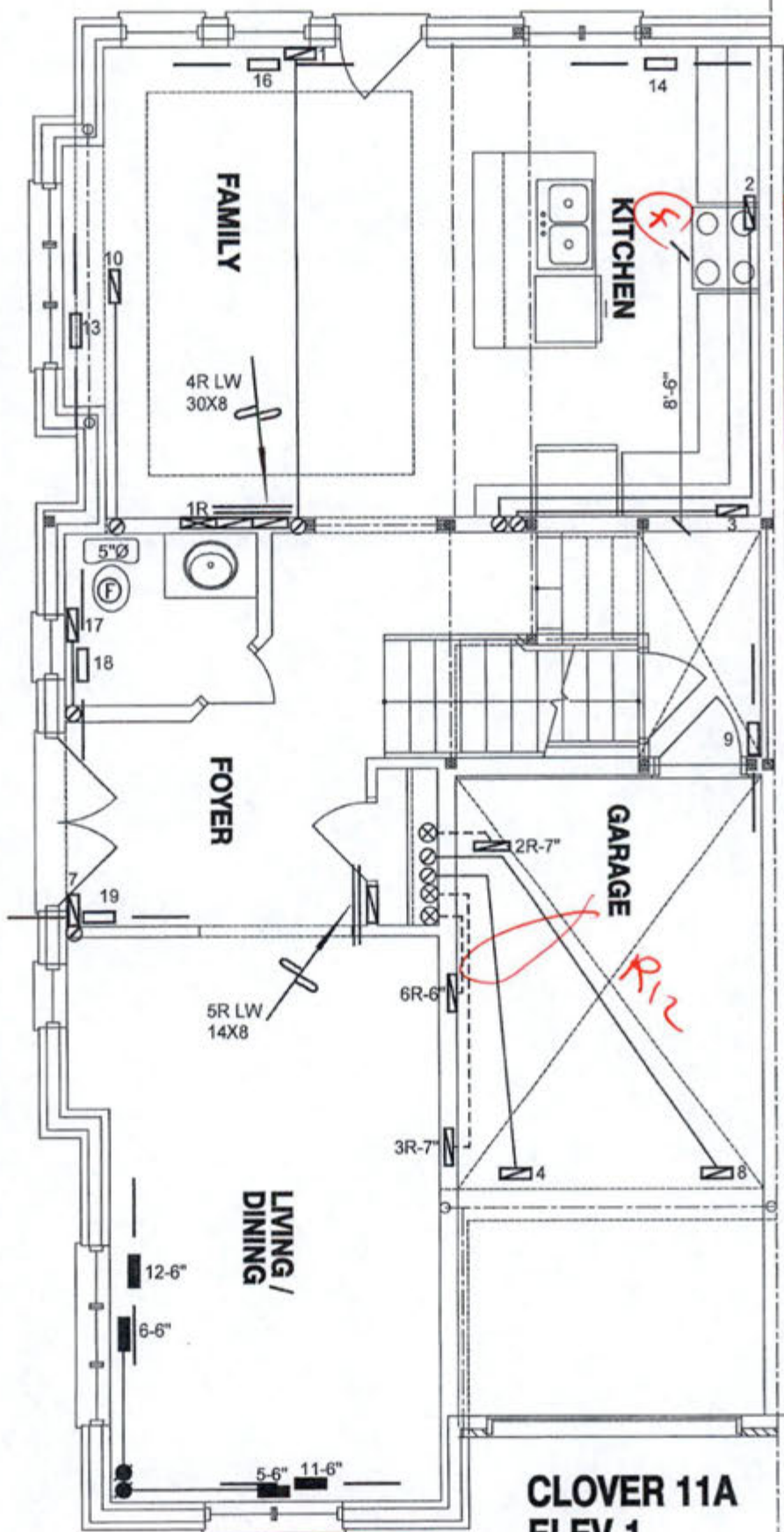
EXHAUST FAN SHALL DISCHARGE DIRECTLY TO OUTSIDE. CLOTHES DRYER EXHAUST SYSTEM SHALL COMPLY WITH OBC DIV B 9.32.1.2, 9.32.1.3 & 9.32.3 REQ'S. BALANCE THE RETURN AIRFLOW ON THE UPPER FLOOR TO MATCH THE SUPPLY. WHEN HRV IS USED AS PRINCIPAL EXHAUST FAN, THE CONTROLLER SHALL BE WIRED TO THE HRV UNIT AND 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 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).

I MECHANICAL ENGINEER HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND ANY OTHERS PER THE BUILDING CODE.
[Signature]
HVAC DESIGN LTD.

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
[Symbol]	SUPPLY AIR GRILLE	[Symbol]	8" SUPPLY AIR BOOT ABOVE	[Symbol]	14" RETURN AIR GRILLE	[Symbol]	RETURN AIR STACK ABOVE
[Symbol]	SUPPLY AIR GRILLE 6" BOOT	[Symbol]	SUPPLY AIR STACK FROM 2nd FLOOR	[Symbol]	30" RETURN AIR GRILLE	[Symbol]	RETURN AIR STACK 2nd FLOOR
[Symbol]	SUPPLY AIR BOOT ABOVE	[Symbol]	8" SUPPLY AIR STACK 2nd FLOOR	[Symbol]	FRA-FLOOR RETURN AIR GRILLE	[Symbol]	REDUCER

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

Client GREENPARK HOMES	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	HEAT LOSS 38731 BTU/H UNIT DATA MAKE GOODMAN MODEL GMEC9606038NA-60 INPUT 60 MBTUH OUTPUT 57.6 MBTUH COOLING 2.0 TONS FAN SPEED 800 cfm @ 0.5" w.g.	# OF RUNS S/A R/A FANS 3RD FLOOR 2ND FLOOR 9 3 2 1ST FLOOR 8 2 2 BASEMENT 4 1 0	Sheet Title BASEMENT HEATING LAYOUT Date AUG/2018 Scale 3/16" = 1'-0" BCIN# 19669 LO# 79568
----------------------------------	---	--	---	---



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

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. HANNA

JAN 10 2019

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

CLOVER 11A
ELEV-1

CSA-F280-12
PACKAGE A1

1. MICHAEL'S CHECKS HAVE REVIEWED
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND ANY QUALIFIED
ENGINEER'S REVIEW, 3.23 OF THE
BUILDING CODE.

Michael's Check
Michael's Check
HVAC DESIGN LTD.

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"X18" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"X18" RETURN AIR GRILLE
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA-FLOOR RETURN AIR GRILLE
					REDUCER

No.	Description	Date
1.		
2.		
3.		

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**

CLOVER 11A **1880 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@hvacadesigns.ca
Web: www.hvacadesigns.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.

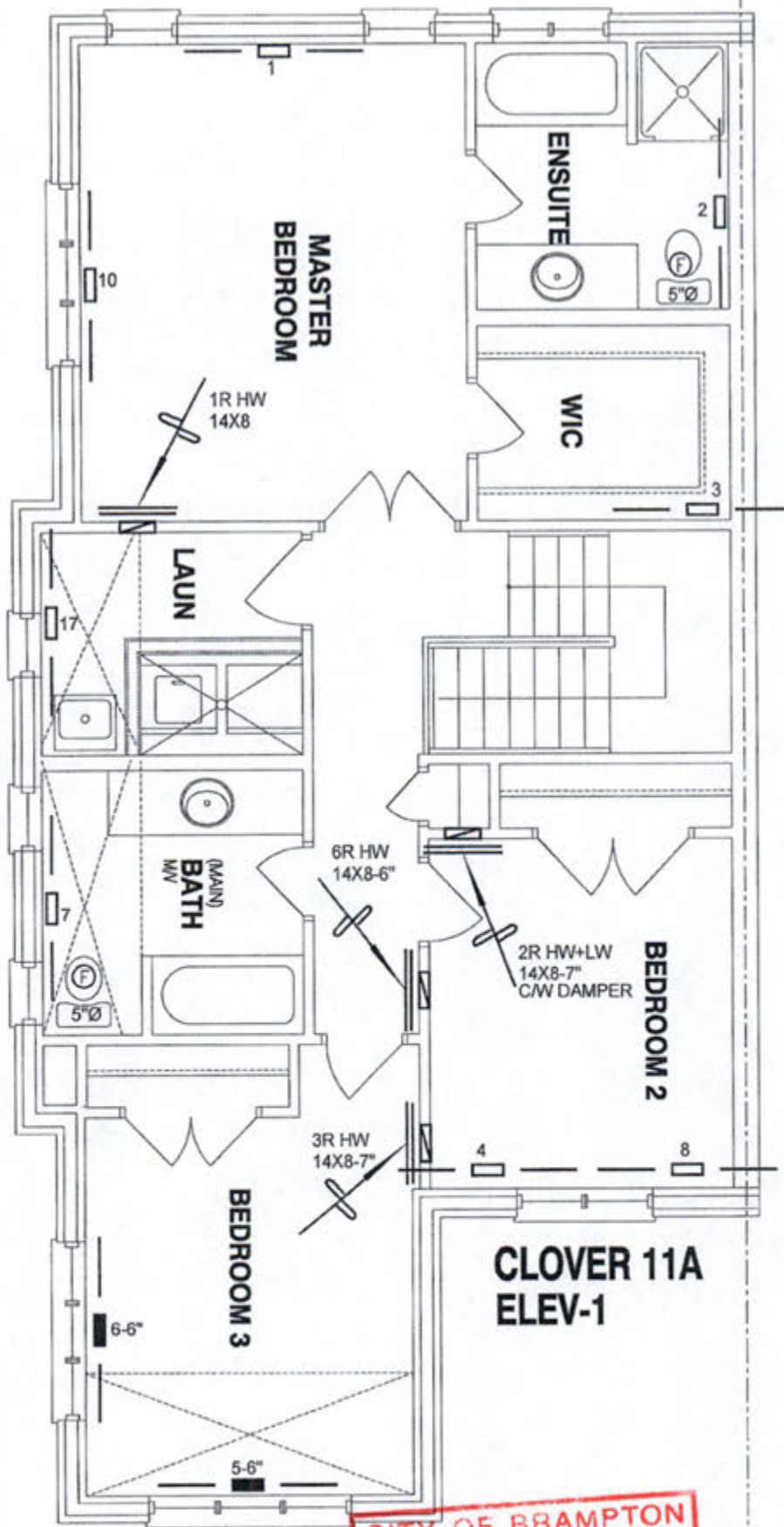
Sheet Title
**FIRST FLOOR
HEATING
LAYOUT**

Date
AUG/2018

Scale
3/16" = 1'-0"

BCIN# 19669

LO# **79568**



CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. HANNA

JAN 10 2019

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

CSA-F280-12
PACKAGE A1

I HEREBY CERTIFY THAT I HAVE
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C, 5.3.3 OF THE
BUILDING CODE.

Michael G. Smith, P.Eng.
Michael G. Smith, P.Eng. (1987)
HVAC DESIGNS LTD.

HVAC LEGEND								
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	3.		
	SUPPLY AIR GRILLE		8" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE	2.		
	SUPPLY AIR GRILLE 8" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	1.		
	SUPPLY AIR BOOT ABOVE		8" SUPPLY AIR STACK 2nd FLOOR		FRA-FLOOR RETURN AIR GRILLE	No.	Description	Date
					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		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	Sheet Title SECOND FLOOR HEATING LAYOUT	
Project Name MINNISALE HOMES CORP BRAMPTON, ONTARIO			Date AUG/2018	
CLOVER 11A 1880 sqft		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 3/16" = 1'-0"	
			BCIN# 19669	
			LO# 79568	