

SITE NAME: MINNISALE HOMES CORP		OPT 5 BED		DATE: Aug-18		WINTER NATURAL AIR CHANGE RATE 0.354		HEAT LOSS AT °F. 74		CSA-F280-12	
BUILDER: GREENPARK HOMES		TYPE: SANDSTONE 2A		LOF: 79592		SUMMER NATURAL AIR CHANGE RATE 0.115		HEAT GAIN AT °F. 11		SB-12 PACKAGE A1	
ROOM USE		MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-5		ENS-2
EXP. WALL		34	23	8	12	8	40	8	19		24
CLG. HT.		10	9	9	9	9	10	9	9		9
FACTORS											
GRS.WALL AREA	LOSS GAIN	340	267	72	108	72	400	72	171		216
GLAZING	LOSS GAIN										
NORTH	20.8 15.5	0 0 0	0 0 0	0 0 0	16 332 248	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0
EAST	20.8 41.0	0 0 0	0 0 0	0 0 0	0 0 0	20 416 821	49 1018 2011	0 0 0	0 0 0		20 416 821
SOUTH	20.8 24.4	0 0 0	9 187 220	0 0 0	0 0 0	0 0 0	0 0 0	7 145 171	30 623 732		0 0 0
WEST	20.8 41.0	32 665 1314	14 291 575	7 145 287	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0
SKYLT.	36.4 100.7	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0
DOORS	24.7 3.7	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0
NET EXPOSED WALL	4.4 0.6	308 1342 199	184 802 119	65 283 42	92 401 59	52 227 34	351 1529 227	65 283 42	141 614 91		196 854 127
NET EXPOSED BSMT WALL ABOVE GR	3.5 0.5	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0
EXPOSED CLG	1.3 0.6	285 357 159	130 163 72	88 110 49	144 180 80	264 331 147	141 177 79	104 130 58	247 309 138		132 165 74
NO ATTIC EXPOSED CLG	2.7 1.2	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	45 121 54	0 0 0	0 0 0		0 0 0
EXPOSED FLOOR	2.5 0.4	0 0 0	0 0 0	0 0 0	60 149 22	105 261 39	0 0 0	0 0 0	0 0 0		132 329 49
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		2364	1442	539	1063	1234	2845	559	1547		1764
SUB TOTAL HT GAIN			1671	586	378	409	1040	2370	961		1070
LEVEL FACTOR / MULTIPLIER	0.20 0.28		0.20 0.28	0.20 0.28	0.20 0.28	0.20 0.28	0.20 0.28	0.20 0.28	0.20 0.28		0.20 0.28
AIR CHANGE HEAT LOSS		671	409	153	302	350	807	159	439		500
AIR CHANGE HEAT GAIN			109	64	25	27	68	155	18		70
DUCT LOSS		0	0	0	136	158	0	0	63		226
DUCT GAIN		0	0	0	0	0	0	0	0		169
HEAT GAIN PEOPLE	240	2	480	0	0	1	240	0	1		0
HEAT GAIN APPLIANCES/LIGHTS			550	0	0	550	550	0	240		550
TOTAL HT LOSS BTU/H		3035	1852	692	1501	1743	3652	718	1986		2490
TOTAL HT GAIN x 1.3 BTU/H		3654	1365	524	1753	2715	4310	375	2357		2416

ROOM USE		LTV	KIT	FAM	WIR	FOY	MUD		WOD	BAS
EXP. WALL		61	39	37	7	14	28		41	178
CLG. HT.		10	10	10	10	11	10		9	9
FACTORS										
GRS.WALL AREA	LOSS GAIN	610	390	370	70	154	280		359	1314
GLAZING	LOSS GAIN									
NORTH	20.8 15.5	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0	0 0 0
EAST	20.8 41.0	39 810 1601	0 0 0	0 0 0	0 0 0	6 125 246	0 0 0		0 0 0	0 0 0
SOUTH	20.8 24.4	20 416 488	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0	0 0 0
WEST	20.8 41.0	0 0 0	66 1371 2709	40 831 1642	7 145 171	0 0 0	0 0 0		0 0 0	6 125 146
SKYLT.	36.4 100.7	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0	0 0 0
DOORS	24.7 3.7	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0	0 0 0
NET EXPOSED WALL	4.4 0.6	551 2401 356	324 1412 209	330 1438 213	63 274 41	108 471 70	250 1133 168		0 0 0	20 493 73
NET EXPOSED BSMT WALL ABOVE GR	3.5 0.5	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0	0 0 0
EXPOSED CLG	1.3 0.6	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		234 822 122	288 1012 150
NO ATTIC EXPOSED CLG	2.7 1.2	0 0 0	0 0 0	10 27 12	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	0 0 0		0 0 0	0 0 0
BASEMENT/CRAWL HEAT LOSS		0	0	0	0	0	0		0 0 0	0 0 0
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0		0 0 0	0 0 0
SUBTOTAL HT LOSS		3627	2783	2296	420	1581	1626		0	6217
SUB TOTAL HT GAIN			2918	1867	211	462	241		1071	7846
LEVEL FACTOR / MULTIPLIER	0.30 0.46		0.30 0.46	0.30 0.46	0.30 0.46	0.30 0.46	0.30 0.46		0.50 1.06	369
AIR CHANGE HEAT LOSS		1672	1283	1058	194	729	749			9475
AIR CHANGE HEAT GAIN			191	122	14	30	16			84
DUCT LOSS		0	0	0	0	0	0			0
DUCT GAIN		0	0	0	0	0	0			0
HEAT GAIN PEOPLE	240	0	0	0	0	0	0			0
HEAT GAIN APPLIANCES/LIGHTS			550	550	0	0	550			0
TOTAL HT LOSS BTU/H		5298	4066	3354	614	2310	2375		0	0
TOTAL HT GAIN x 1.3 BTU/H		4101	4757	3301	293	640	1049		1071	17321

**CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. DESAI**

NOV 29 2018

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

SITE NAME: MINNISALE HOMES CORP
BUILDER: GREENPARK HOMES

OPT 5 BED
TYPE: SANDSTONE 2A

DATE: Aug-18

GFA: 2998 LO# 79592

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 54,078 TOTAL HEAT GAIN 34,971
AIR FLOW RATE CFM 20.91 AIR FLOW RATE CFM 32.34

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

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

#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 @ 6" E.S.P.

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	11	8	4
R/A	0	0	5	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	3	4	5	6	7	8	10	11	12	13	14	15	18	19	20	21	22	23	24
ROOM NAME	ENS	MBR	MBR	BED-5	ENS-2	BED-4	BED-3	BED-4	WIC	BATH	LIV	LIV	KIT	KIT	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.85	1.52	1.52	1.99	2.49	1.83	1.74	1.83	0.69	0.72	2.65	2.65	2.03	2.03	0.61	2.31	2.38	4.60	4.60	4.60	4.60
CFM PER RUN HEAT	39	32	32	42	52	38	36	38	14	15	55	55	43	43	13	48	50	96	96	96	96
RM GAIN MBH	1.37	1.83	1.83	2.36	2.42	2.15	2.71	2.15	0.52	0.37	2.05	2.05	2.38	2.38	0.29	0.64	1.05	0.34	0.34	0.34	0.34
CFM PER RUN COOLING	44	59	59	76	78	70	88	70	17	12	66	66	77	77	9	21	34	11	11	11	11
ADJUSTED PRESSURE	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	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	50	38	32	49	48	56	28	64	57	50	51	54	41	21	33	36	27	23	24	34	41
EQUIVALENT LENGTH	140	140	190	160	170	170	170	170	170	140	190	170	160	140	170	140	150	170	190	140	170
TOTAL EFFECTIVE LENGTH	190	178	222	209	218	226	198	234	227	190	241	224	201	161	203	176	177	193	214	174	211
ADJUSTED PRESSURE	0.09	0.1	0.08	0.08	0.08	0.08	0.08	0.07	0.08	0.09	0.07	0.08	0.09	0.11	0.08	0.1	0.1	0.08	0.08	0.09	0.08
ROUND DUCT SIZE	4	5	5	5	5	5	6	5	4	4	5	5	5	5	4	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	447	235	235	308	382	279	184	279	161	172	404	404	316	316	149	551	574	489	489	489	489
COOLING VELOCITY (ft/min)	505	433	433	558	573	514	449	514	195	138	485	485	565	565	103	241	390	56	56	56	56
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10
TRUNK	A	E	A	A	D	B	C	B	A	C	B	B	A	A	E	B	E	A	E	C	B

RUN #	25	26
ROOM NAME	FAM	BED-2
RM LOSS MBH	3.35	1.50
CFM PER RUN HEAT	70	31
RM GAIN MBH	3.30	1.75
CFM PER RUN COOLING	107	57
ADJUSTED PRESSURE	0.15	0.17
ACTUAL DUCT LGH.	16	39
EQUIVALENT LENGTH	110	190
TOTAL EFFECTIVE LENGTH	126	229
ADJUSTED PRESSURE	0.12	0.08
ROUND DUCT SIZE	6	5
HEATING VELOCITY (ft/min)	357	228
COOLING VELOCITY (ft/min)	546	419
OUTLET GRILL SIZE	4X10	3X10
TRUNK	E	C

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SUPPLY AIR TRUNK SIZE

TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	309	0.08	9	10	556
TRUNK B	330	0.07	9.6	10	594
TRUNK C	508	0.07	11.3	14	653
TRUNK D	869	0.07	13.8	22	711
TRUNK E	261	0.08	8.5	8	587
TRUNK F	0	0.00	0	0	0

RETURN AIR TRUNK SIZE

TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK G	0	0.00	0	0	0
TRUNK H	0	0.00	0	0	0
TRUNK I	0	0.00	0	0	0
TRUNK J	0	0.00	0	0	0
TRUNK K	0	0.00	0	0	0
TRUNK L	0	0.00	0	0	0
TRUNK O	0	0.05	0	0	8
TRUNK P	0	0.05	0	0	8
TRUNK Q	0	0.05	0	0	8
TRUNK R	0	0.05	0	0	8
TRUNK S	0	0.05	0	0	8
TRUNK T	0	0.05	0	0	8
TRUNK U	0	0.05	0	0	8
TRUNK V	0	0.05	0	0	8
TRUNK W	0	0.05	0	0	8
TRUNK X	1131	0.05	16.5	32	8
TRUNK Y	856	0.05	14.9	26	8
TRUNK Z	0	0.05	0	0	8
DROP	1131	0.05	16.5	24	10

RETURN AIR

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
AIR VOLUME	0	0	0	0	0	0	0	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	0.15
ACTUAL DUCT LGH.	43	45	55	62	46	56	29	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	185	145	225	245	150	250	225	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	228	190	280	307	196	306	254	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.06	0.08	0.05	0.05	0.08	0.05	0.06	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	7.5	6.3	6	6	7	9.8	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	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	X
INLET GRILL SIZE	14	14	14	14	14	30	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: SANDSTONE 2A
 SITE NAME: MINNISALE HOMES CORP

 LO # 79502
 OPT 5 BED

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/in 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	4	@ 10.6 cfm	42.4	cfm
Kitchen & Bathrooms	4	@ 10.6 cfm	42.4	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	95.4	cfm

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	190.8	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	95.4	cfm

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

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM	ΔT °F	FACTOR	% LOSS
95.4 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
W/R	FV-05-11VK1	50	☒	0.3

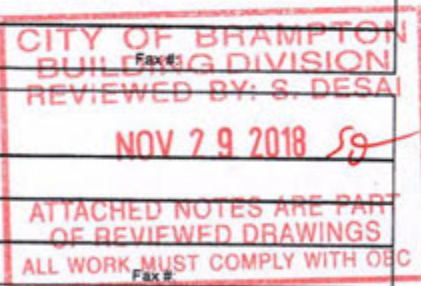
HEAT RECOVERY VENTILATOR 9.32.3.11.
 Model: VANE 65H
 155 cfm high 64 cfm low
 75 % Sensible Efficiency ☒ HVI Approved
 @ 32 deg F (0 deg C)

LOCATION OF INSTALLATION
 Lot: Concession
 Township: Plan:
 Address:
 Roll # Building Permit #

BUILDER: GREENPARK HOMES
 Name:
 Address:
 City:
 Telephone #:

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: *Michael O'Rourke*
 HRAI # 001820
 Date: August-18

 I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C.3.2.3 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# 79592		Model: SANDSTONE 2A		Builder: GREENPARK HOMES																																																								
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House Volume <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr> <td>Bsmt</td> <td>1331</td> <td>9</td> <td>11979</td> </tr> <tr> <td>First</td> <td>1331</td> <td>10</td> <td>13310</td> </tr> <tr> <td>Second</td> <td>1667</td> <td>9</td> <td>15003</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>40,292.0 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>1140.9 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1331	9	11979	First	1331	10	13310	Second	1667	9	15003	Third	0	9	0	Fourth	0	9	0	Total:			40,292.0 ft³	Total:			1140.9 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>WINTER NATURAL AIR CHANGE RATE</td> <td>0.354</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.115</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="5">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DTDh</td> <td>22</td> <td>-19</td> <td>41</td> <td>74</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>30</td> <td>6</td> <td>11</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.354	SUMMER NATURAL AIR CHANGE RATE	0.115	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-19	41	74	Summer DTDc	24	30	6	11
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																									
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5.2.3.1 Heat Loss due to Air Leakage $HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.354 x 316.93 x 41 °C x 1.2 = 5554 W = 18949 Btu/h			6.2.6 Sensible Gain due to Air Leakage $HG_{salb} = LR_{aire} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ 0.115 x 316.93 x 6 °C x 1.2 = 268 W = 913 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation $HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 95 CFM x 74 °F x 1.08 x 0.25 = 1911 Btu/h			6.2.7 Sensible heat Gain due to Ventilation $HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 95 CFM x 11 °F x 1.08 x 0.25 = 283 Btu/h																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
$HL_{airr} = \text{Level Factor} \times HL_{airbv} \times ((HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel}))$ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{level})</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.5</td> <td rowspan="5">18,949</td> <td>8,918</td> <td>1.062</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>12,332</td> <td>0.461</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>13,357</td> <td>0.284</td> </tr> <tr> <td>4</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> <tr> <td>5</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> </tbody> </table> *HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0					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	18,949	8,918	1.062	2	0.3	12,332	0.461	3	0.2	13,357	0.284	4	0	0	0.000	5	0	0	0.000																														
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CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. DESAI
NOV 29 2018
ATTACHED NOTES ARE PART
OF REVIEWED DRAWINGS
ALL WORK MUST COMPLY WITH OBC

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: SANDSTONE 2A	OPT 5 BED	BUILDER: GREENPARK HOMES
SFQT: 2998	LO# 79592	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):	40292.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 52.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	178.0 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
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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	-

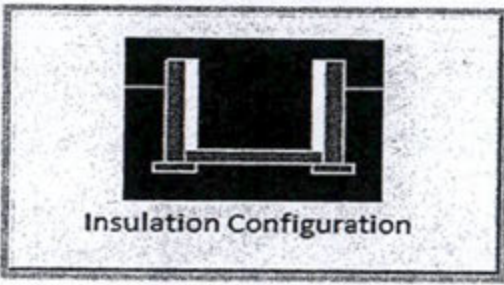
INDIVIDUAL BCIN: 19669

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):	15.8	 Insulation Configuration
Floor Width (m):	11.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.7	
Door Area (m ²):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	CITY OF BRAMPTON BUILDING DIVISION REVIEWED BY: S. DESAI NOV 29 2010 ATTACHED NOTES ARE PART OF REVIEWED DRAWINGS ALL WORK MUST COMPLY WITH CBC
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	1821	

TYPE: SANDSTONE 2A
LO# 79592

OPT 5 BED

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):	1140.9		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1520.9 cm ²	
	3.57	ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust	
	45.0	45.0	
Flue Size			
Flue #:	#1	#2	#3
Diameter (mm):	0	0	0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.354		
Cooling Air Leakage Rate (ACH/H):	0.115		

TYPE: SANDSTONE 2A
LO# 79592

OPT 5 BED



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 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.

WOD CONDITION

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. DESAI

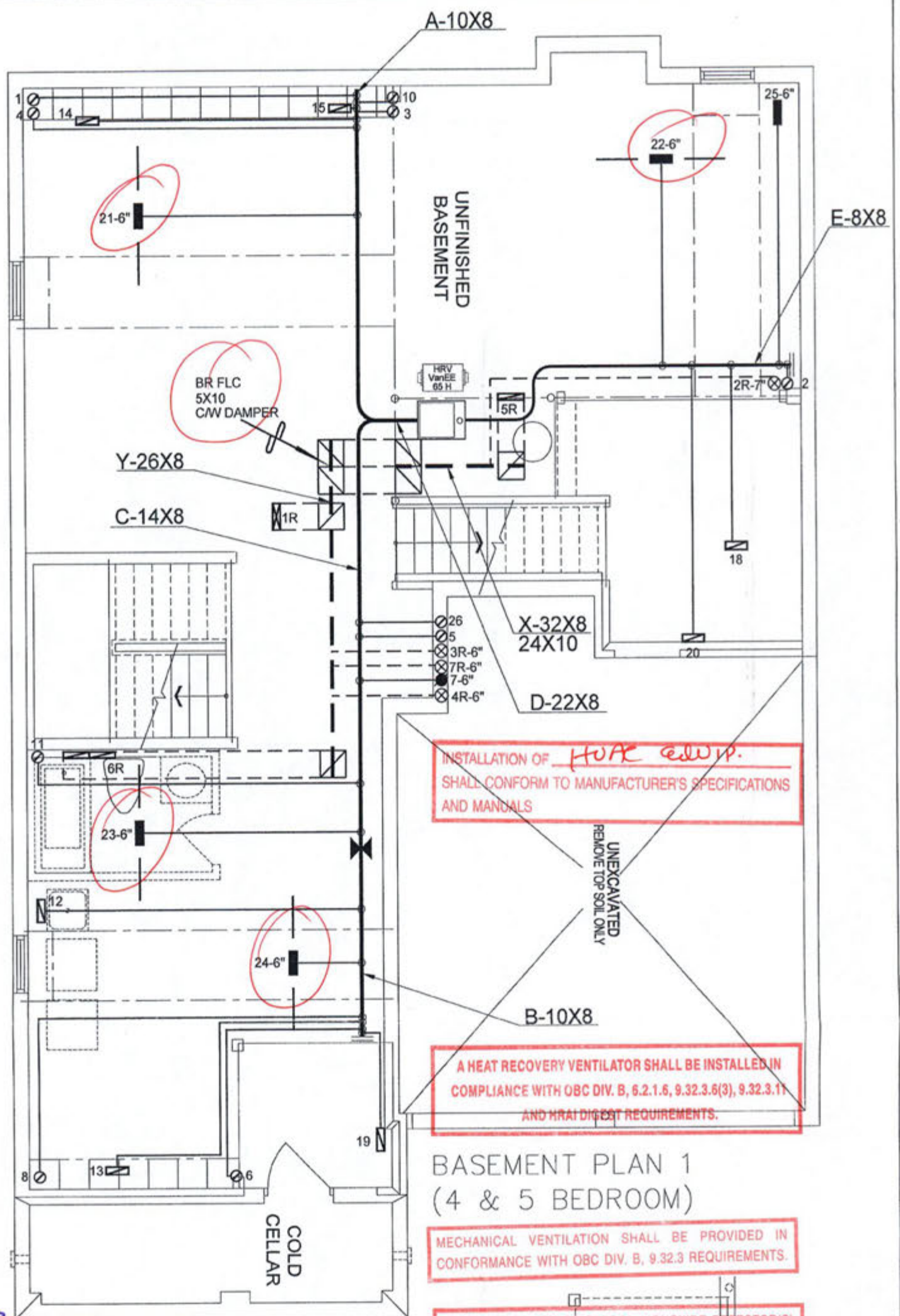
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18-333295 000 00 002

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 OUTSIDE. CLOTHES DRYER EXHAUSTS 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).

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



BASEMENT PLAN 1
(4 & 5 BEDROOM)

BASEMENT PLAN 2
(4 & 5 BEDROOM)

CSA-F280-12
PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x6" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x6" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	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**

OPT 2ND
SANDSTONE 2A 2998 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.

HEAT LOSS 55989 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS		
MAKE	GOODMAN	3RD FLOOR		
MODEL	GMEC960603BNA	2ND FLOOR	11	5 3
INPUT	60 MBTUH	1ST FLOOR	9	2 2
OUTPUT	57.6 MBTUH	BASEMENT	4	1 0
COOLING	3.0 TONS	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		
FAN SPEED	1131 cfm @ 0.8" w.g.			

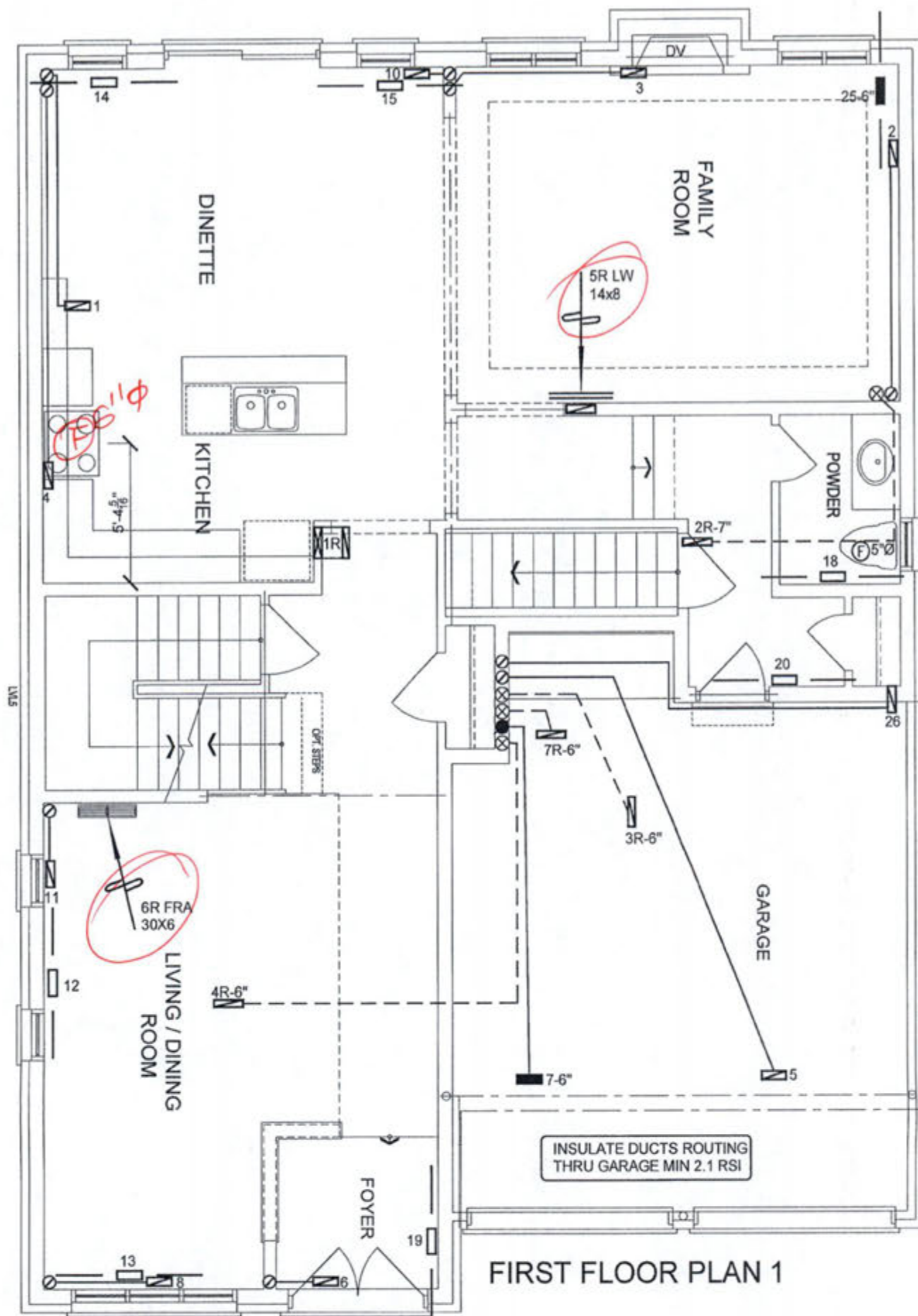
Sheet Title
**BASEMENT
HEATING
LAYOUT**

Date
AUG/2018

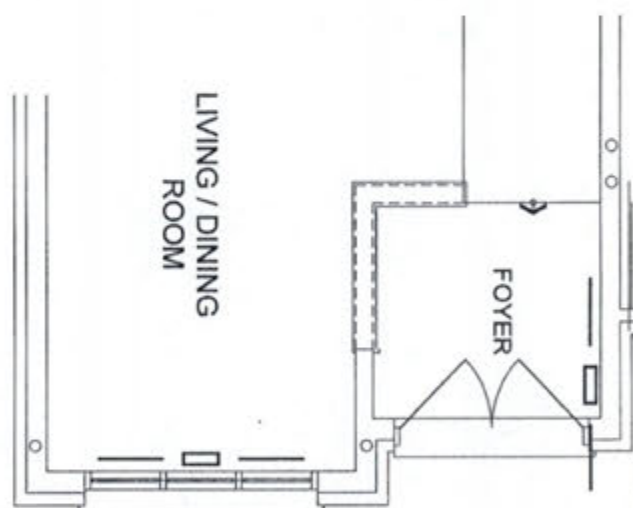
Scale
3/16" = 1'-0"

BCIN# 19669

LO# 79592



FIRST FLOOR PLAN 1



FIRST FLOOR PLAN 2

CSA-F280-12
PACKAGE A1

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. DESAI
NOV 29 2018
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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.

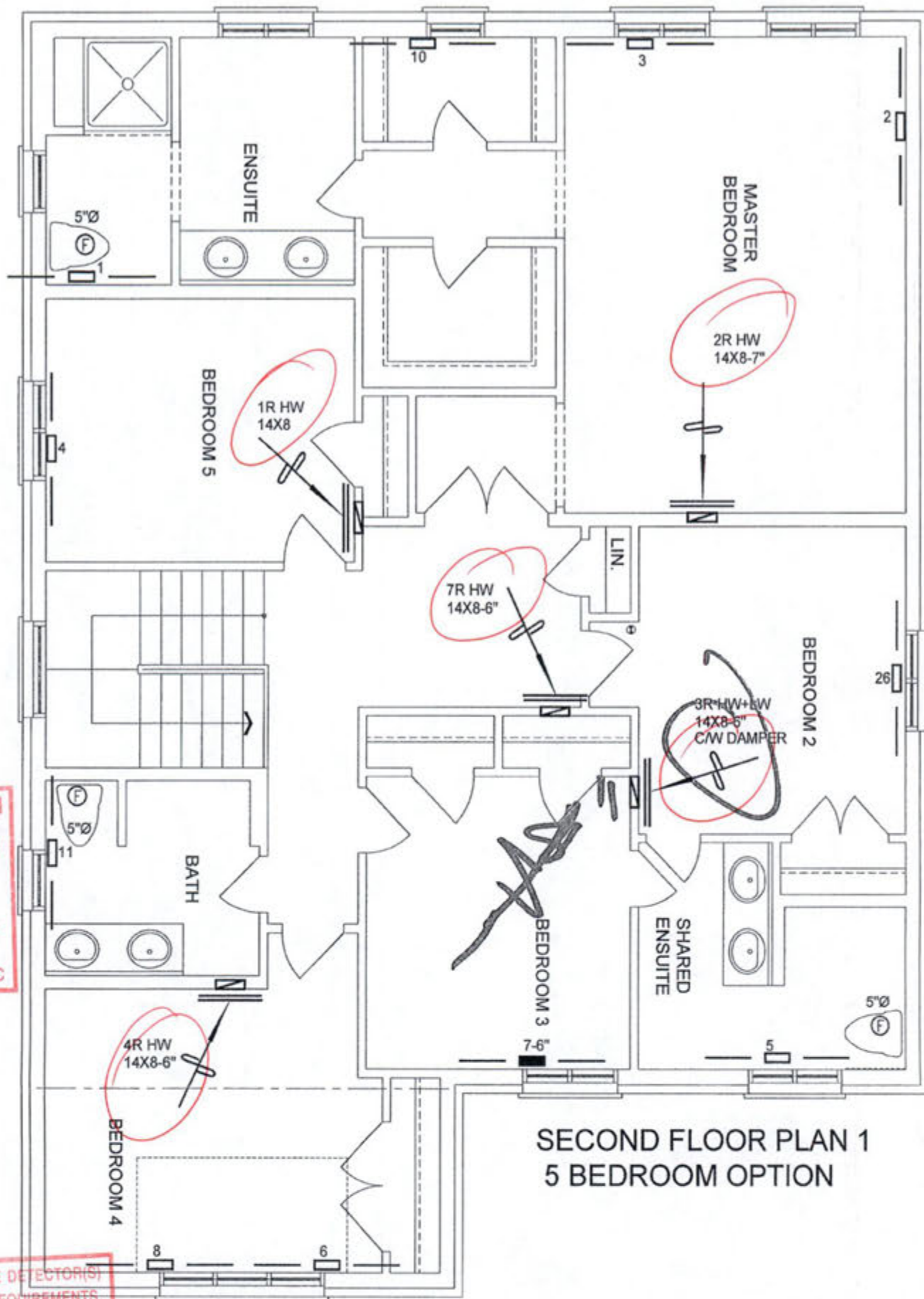
THIS INSTALLATION OF A GAS FIREPLACE IS REGULATED UNDER
THE T.S.A. BY C.S.A. B149.1 NATURAL GAS AND PROPANE
INSTALLATION CODE CALL ENBRIDGE FOR INSPECTION AT
1-800-785-1314

I MICHAEL O'BROCK HAVE REVIEWED
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C, 12.5 OF THE
BUILDING CODE.
Michael O'Brock, BC2019 19669
HVAC DESIGNS LTD.

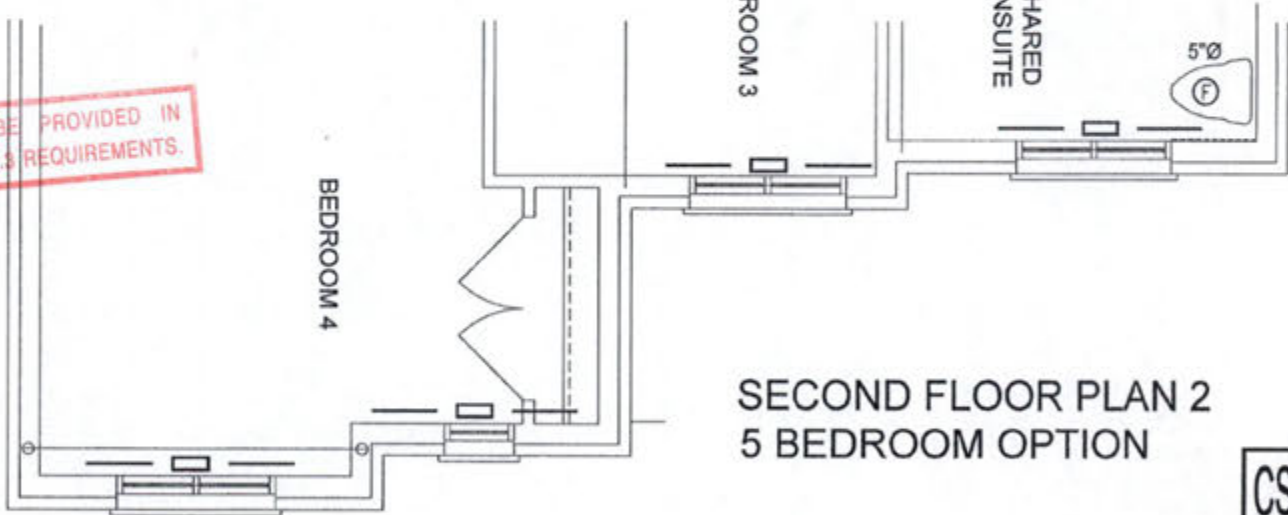
HVAC LEGEND							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
— □ —	FLOOR SUPPLY AIR GRILLE	— ■ —	6" SUPPLY AIR BOOT ABOVE	— □ —	14"x8" RETURN AIR GRILLE	— □ —	RETURN AIR STACK ABOVE
— ■ —	FLOOR SUPPLY AIR GRILLE 6" BOOT	— □ —	SUPPLY AIR STACK FROM 2nd FLOOR	— □ —	30"x8" RETURN AIR GRILLE	— □ —	RETURN AIR STACK 2nd FLOOR
— □ —	SUPPLY AIR BOOT ABOVE	— □ —	6" SUPPLY AIR STACK 2nd FLOOR	— □ —	FRA- FLOOR RETURN AIR GRILLE	— □ —	REDUCER

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Client	HVACDESIGNS LTD. 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services 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		Date	AUG/2018	
MINNISALE HOMES CORP BRAMPTON, ONTARIO		Scale	3/16" = 1'-0"	
		BCIN# 19669		
OPT 2ND SANDSTONE 2A 2998 sqft		LO#	79592	



SECOND FLOOR PLAN 1
5 BEDROOM OPTION



SECOND FLOOR PLAN 2
5 BEDROOM OPTION

CSA-F280-12
PACKAGE A1

I MICHAEL OROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.3 OF THE BUILDING CODE.
Michael O'Rourke, P.Eng. 1966
HVAC DESIGNS LTD.

HVAC LEGEND						REVISIONS	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Description
	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"x6" RETURN AIR GRILLE	2.	
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		RETURN AIR STACK ABOVE	1.	
					RETURN AIR STACK 2nd FLOOR	No.	Description
					FRA- FLOOR RETURN AIR GRILLE	Date	
					REDUCER		

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Client GREENPARK HOMES Project Name MINNISALE HOMES CORP BRAMPTON, ONTARIO OPT 2ND SANDSTONE 2A 2998 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@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 SECOND FLOOR HEATING LAYOUT Date AUG/2018 Scale 3/16" = 1'-0" BCIN# 19669 LO# 79592
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