

SITE NAME: RUSSEL GARDENS PHASE 3

BUILDER: GREENPARK HOMES

TYPE: MOUNTAINASH 11S

GFA: 2986

DATE: May-20

LO# 86976

WINTER NATURAL AIR CHANGE RATE 0.338

SUMMER NATURAL AIR CHANGE RATE 0.121

HEAT LOSS AT °F. 71

HEAT GAIN AT °F. 13

CSA-F280-12

SB-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	MBR	ENS	FLEX	BED-2	BED-3	BED-4	ENS-2	WIC-2	WIC-4	ENS-3	
EXP. WALL	37			37	26	24	27	33	13	6	6	8	10	
CLG. HT.	9			9	9	10	9	9	9	9	9	9	9	
GRS.WALL AREA	LOSS	GAIN		333	225	240	243	297	117	54	54	72	90	
GLAZING	LOSS	GAIN		LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	
NORTH	19.8	16.0	0	0	0	0	0	0	0	7	138	112	0	0
EAST	19.8	41.5	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	19.8	24.9	0	0	0	25	494	622	0	0	0	0	30	593
WEST	19.8	41.5	32	633	1330	25	494	1039	0	0	0	0	0	0
SKYL.T.	34.6	101.5	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	23.5	4.3	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.1	0.8	301	1248	226	175	725	132	224	929	168	197	817	148
NET EXPOSED BSMT WALL ABOVE GR	3.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.2	0.6	382	455	224	156	186	92	199	237	117	208	248	122
NO ATTIC EXPOSED CLG	2.6	1.3	0	0	0	0	0	0	30	77	38	0	0	0
EXPOSED FLOOR	2.4	0.4	0	0	0	0	0	0	238	584	102	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			2336		1900	1482	2614	2472	1287	590	578	842	760	
SUB TOTAL HT GAIN				1780	1884	541	2322	2570	977	220	469	815	472	
LEVEL FACTOR / MULTIPLIER	0.20	0.22		0.20	0.22	0.20	0.22	0.20	0.22	0.20	0.22	0.20	0.22	
AIR CHANGE HEAT LOSS			519		422	329	581	549	286	131	128	187	169	
AIR CHANGE HEAT GAIN			99		106	30	129	143	54	12	26	45	26	
DUCT LOSS			0		0	0	320	0	0	72	71	0	0	
DUCT GAIN			0		0	0	324	0	0	23	49	0	0	
HEAT GAIN PEOPLE	240		2	480	0	0	1	240	1	240	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS				546	0	0	546	546	546	0	0	0	0	
TOTAL HT LOSS BTU/H			2865		2322	1811	3515	3021	1573	793	777	1029	929	
TOTAL HT GAIN x 1.3 BTU/H			3777		2586	742	4623	4548	2362	333	708	1319	648	

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	L/D	FAM	K/B	L/H	LND	FOY	WOD	BAS
EXP. WALL	24			24	33	34	35	31	17	47	174
CLG. HT.	10			10	10	10	10	11	10	8	8
GRS.WALL AREA	LOSS	GAIN		240	330	340	350	341	170	376	1011
GLAZING	LOSS	GAIN		LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN
NORTH	19.8	16.0	0	0	0	0	0	0	0	0	0
EAST	19.8	41.5	0	0	0	0	0	0	0	0	0
SOUTH	19.8	24.9	60	1186	1494	28	554	697	0	0	0
WEST	19.8	41.5	0	0	0	47	929	1953	0	0	0
SKYL.T.	34.6	101.5	0	0	0	0	0	0	0	0	0
DOORS	23.5	4.3	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.1	0.8	180	748	136	265	1057	192	263	1111	201
NET EXPOSED BSMT WALL ABOVE GR	3.3	0.6	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.2	0.6	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.6	1.3	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.4	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			1932		2540	2579	2607	1909	1571	1140	7738
SUB TOTAL HT GAIN				1629	2642	2746	2816	433	413	662	538
LEVEL FACTOR / MULTIPLIER	0.30	0.38		0.30	0.38	0.30	0.38	0.30	0.38	0.50	0.93
AIR CHANGE HEAT LOSS			728		957	972	983	720	592		8254
AIR CHANGE HEAT GAIN			91		158	163	157	26	23		72
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	0	0
HEAT GAIN APPLIANCES/LIGHTS				546	546	546	546	546	0	0	546
TOTAL HT LOSS BTU/H			2661		3497	3551	3590	2629	2163	1140	15892
TOTAL HT GAIN x 1.3 BTU/H			2945		4609	4477	4574	1304	566	861	1633

TOTAL HEAT GAIN BTU/H: 42695

TONS: 3.56

LOSS DUE TO VENTILATION LOAD BTU/H: 1515

STRUCTURAL HEAT LOSS: 53847

TOTAL COMBINED HEAT LOSS BTU/H: 55362

SITE NAME: RUSSEL GARDENS PHASE 3
BUILDER: GREENPARK HOMES

LOT 98
TYPE: MOUNTAINASH 11S

DATE: May-20

GFA: 2985 LO# 85976

HEATING CFM 1504 COOLING CFM 1504
TOTAL HEAT LOSS 53,847 TOTAL HEAT GAIN 42,420
AIR FLOW RATE CFM 27.93 AIR FLOW RATE CFM 35.46

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 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

#GOODMAN
GMCC960804CNA 80
FAN SPEED LOW 868
MEDLOW 978
MEDIUM 1112
MEDIUM HIGH 1504
HIGH 1615

AFUE = 96 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = 76,800

DESIGN CFM = 1504
CFM @ 6" E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	13	9	5
R/A	0	0	6	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	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	FLEX	BED-2	BED-3	BED-4	ENS-2	WIC-2	WIC-4	MBR	ENS-3	L/D	FAM	K/B	K/B	L/H	LND	L/H	FOY	FAM	BAS	BAS	BAS	BAS
RM LOSS MBH	1.43	2.32	1.81	1.76	1.51	1.57	0.79	0.78	1.03	1.43	0.93	2.66	1.75	1.78	1.78	1.79	2.63	1.79	2.16	1.75	3.43	3.43	3.43	3.43
CFM PER RUN HEAT	40	65	51	49	42	44	22	22	29	40	26	74	49	50	50	50	73	50	60	49	96	96	96	96
RM GAIN MBH	1.89	2.59	0.74	2.31	2.27	2.36	0.33	0.71	1.12	1.89	0.65	2.95	2.30	2.24	2.24	2.29	1.30	2.29	0.57	2.30	0.50	0.50	0.50	0.50
CFM PER RUN COOLING	67	92	26	82	81	84	12	25	40	67	23	104	82	79	79	81	46	81	20	82	18	18	18	18
ADJUSTED PRESSURE	0.17	0.16	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.16	0.17	0.16	0.17	0.16	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	42	25	38	63	40	25	51	50	35	54	56	16	20	25	38	35	43	31	24	17	34	14	15	35
EQUIVALENT LENGTH	110	200	190	140	180	240	150	120	140	150	160	150	140	110	120	110	120	100	170	140	110	120	140	110
TOTAL EFFECTIVE LENGTH	152	225	228	203	220	265	201	170	175	204	216	166	160	135	156	145	163	131	194	157	144	134	155	145
ADJUSTED PRESSURE	0.11	0.07	0.08	0.08	0.07	0.06	0.09	0.1	0.1	0.08	0.08	0.1	0.1	0.13	0.11	0.11	0.11	0.12	0.09	0.1	0.11	0.12	0.1	0.11
ROUND DUCT SIZE	5	6	5	6	6	6	4	4	4	5	4	6	6	5	5	5	5	5	5	6	6	6	6	6
HEATING VELOCITY (ft/min)	294	331	374	250	214	224	252	252	333	294	298	377	250	367	367	367	536	367	441	250	489	489	489	489
COOLING VELOCITY (ft/min)	492	469	191	418	413	428	138	287	459	492	264	530	418	580	580	595	338	595	147	418	92	92	92	92
OUTLET GRILL SIZE	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10
TRUNK	B	D	A	D	C	D	D	D	D	A	C	D	B	B	A	C	A	C	C	B	A	B	D	C

RUN #	25	26	27
ROOM NAME	BED-2	BED-3	BAS
RM LOSS MBH	1.76	1.51	3.43
CFM PER RUN HEAT	49	42	96
RM GAIN MBH	2.31	2.27	0.50
CFM PER RUN COOLING	82	81	18
ADJUSTED PRESSURE	0.16	0.16	0.16
ACTUAL DUCT LGH.	57	57	26
EQUIVALENT LENGTH	130	180	110
TOTAL EFFECTIVE LENGTH	187	237	136
ADJUSTED PRESSURE	0.09	0.07	0.12
ROUND DUCT SIZE	6	6	6
HEATING VELOCITY (ft/min)	250	214	489
COOLING VELOCITY (ft/min)	418	413	92
OUTLET GRILL SIZE	4X10	4X10	4X10
TRUNK	D	C	B

SUPPLY AIR TRUNK SIZE														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 CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)				
TRUNK A	310	0.08	9	10	x	8	558		TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.05	0	0	x	8	0			
TRUNK B	690	0.08	12.2	18	x	8	690		TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.05	0	0	x	8	0			
TRUNK C	366	0.07	10	12	x	8	549		TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.05	0	0	x	8	0			
TRUNK D	816	0.06	14	22	x	8	668		TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.05	0	0	x	8	0			
TRUNK E	0	0.00	0	0	x	8	0		TRUNK K	0	0.00	0	0	x	8	0	TRUNK S	0	0.05	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	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	1114	0.05	16.4	32	x	8	627			
																	TRUNK Y	570	0.05	12.8	20	x	8	513			
																	TRUNK Z	390	0.05	11.1	14	x	8	501			
																	DROP	1504	0.05	18.4	24	x	14	645			

RETURN AIR #	1	2	3	4	5	6	7	8																BR
	0	0	0	0	2@7"	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	234
AIR VOLUME	85	140	85	75	230	85	175	395	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	234
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.	53	59	57	57	60	62	21	23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17
EQUIVALENT LENGTH	195	165	195	240	215	155	195	235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	248	224	252	297	275	217	216	258	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	162
ADJUSTED PRESSURE	0.06	0.07	0.06	0.05	0.05	0.07	0.07	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	0.09
ROUND DUCT SIZE	6	6.9	6	6	9.1	5.8	7.5	10.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
	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	30	14	14	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24

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
AIR VOLUME	85	140	85	75	230	85	175	395	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.	53	59	57	57	60	62	21	23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	195	165	195	240	215	155	195	235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	248	224	252	297	275	217	216	258	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.06	0.07	0.06	0.05	0.05	0.07	0.07	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
ROUND DUCT SIZE	6	6.9	6	6	9.1	5.8	7.5	10.6	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	8	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
INLET GRILL SIZE	14	14	14	14	30	14	14	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: MOUNTAINASH 11S
SITE NAME: RUSSEL GARDENS PHASE 3

LO # 85976

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	4 @ 10.6 cfm	42.4 cfm
Other Rooms	7 @ 10.6 cfm	74.2 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	68.6	cfm
4 Bedroom	79.5	cfm
5 Bedroom	95.4	cfm
TOTAL	79.5	cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	190.8	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	111.3	cfm

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

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
79.5 CFM	71 F	1.08	X	0.25

SUPPLEMENTAL FANS		PANASONIC		
Location	Model	cfm	HVI	Sones
ENS	FV-05-11VK1	50	☒	0.3
ENS-2	FV-05-11VK1	50	☒	0.3
PWD	FV-05-11VK1	60	☒	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:	May-20

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

LO#: 85976

Model: MOUNTAINASH 11S

Builder: GREENPARK HOMES

Date: 07/05/2020

Volume Calculation
House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1313	8	10504
First	1313	10	13130
Second	1672	9	15048
Third	0	9	0
Fourth	0	9	0
Total:			38,682.0 ft³
Total:			1095.4 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.338
SUMMER NATURAL AIR CHANGE RATE	0.121

Design Temperature Difference

	T _{in} °C	T _{out} °C	ΔT °C	ΔT °F
Winter DTD _h	22	-17	39	71
Summer DTD _c	24	31	7	13

5.2.3.1 Heat Loss due to Air Leakage

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

$$0.338 \times 304.26 \times 39^\circ\text{C} \times 1.2 = 4838 \text{ W}$$

$$= 16508 \text{ Btu/h}$$

6.2.6 Sensible Gain due to Air Leakage

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

$$0.121 \times 304.26 \times 7^\circ\text{C} \times 1.2 = 314 \text{ W}$$

$$= 1072 \text{ Btu/h}$$

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

$$80 \text{ CFM} \times 71^\circ\text{F} \times 1.08 \times 0.25 = 1515 \text{ Btu/h}$$

6.2.7 Sensible heat Gain due to Ventilation

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

$$80 \text{ CFM} \times 13^\circ\text{F} \times 1.08 \times 0.25 = 275 \text{ Btu/h}$$

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

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

Level	Level Factor (LF)	HL _{airbv} Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{cleve})	Air Leakage Heat Loss Multiplier (LF x HL _{airbv} / HL _{cleve})
1	0.5	16,508	8,878	0.930
2	0.3		13,138	0.377
3	0.2		14,861	0.222
4	0		0	0.000
5	0		0	0.000

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

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

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** MOUNTAINASH 11S**BUILDER:** GREENPARK HOMES**SFQT:** 2985**LO#** 85976**SITE:** RUSSEL GARDENS PHASE 3**DESIGN ASSUMPTIONS**

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	1	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	SOUTH	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	38682.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	5.0 ft
LENGTH: 50.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	174.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component****Compliance Package
A1****Nominal Min. Eff.**

Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20 ci	21.12
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	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13
Windows and Sliding Glass Doors Maximum U-Value	0.28	-
Skylights Maximum U-Value	0.49	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

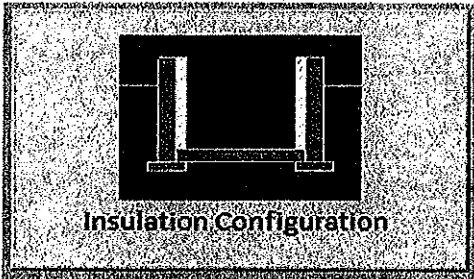
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Hamilton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.2	 Insulation Configuration
Floor Width (m):	11.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.4	
Depth Below Grade (m):	1.52	
Window Area (m ²):	2.2	
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):		1687

TYPE: MOUNTAINASH 11S
LO# 85976

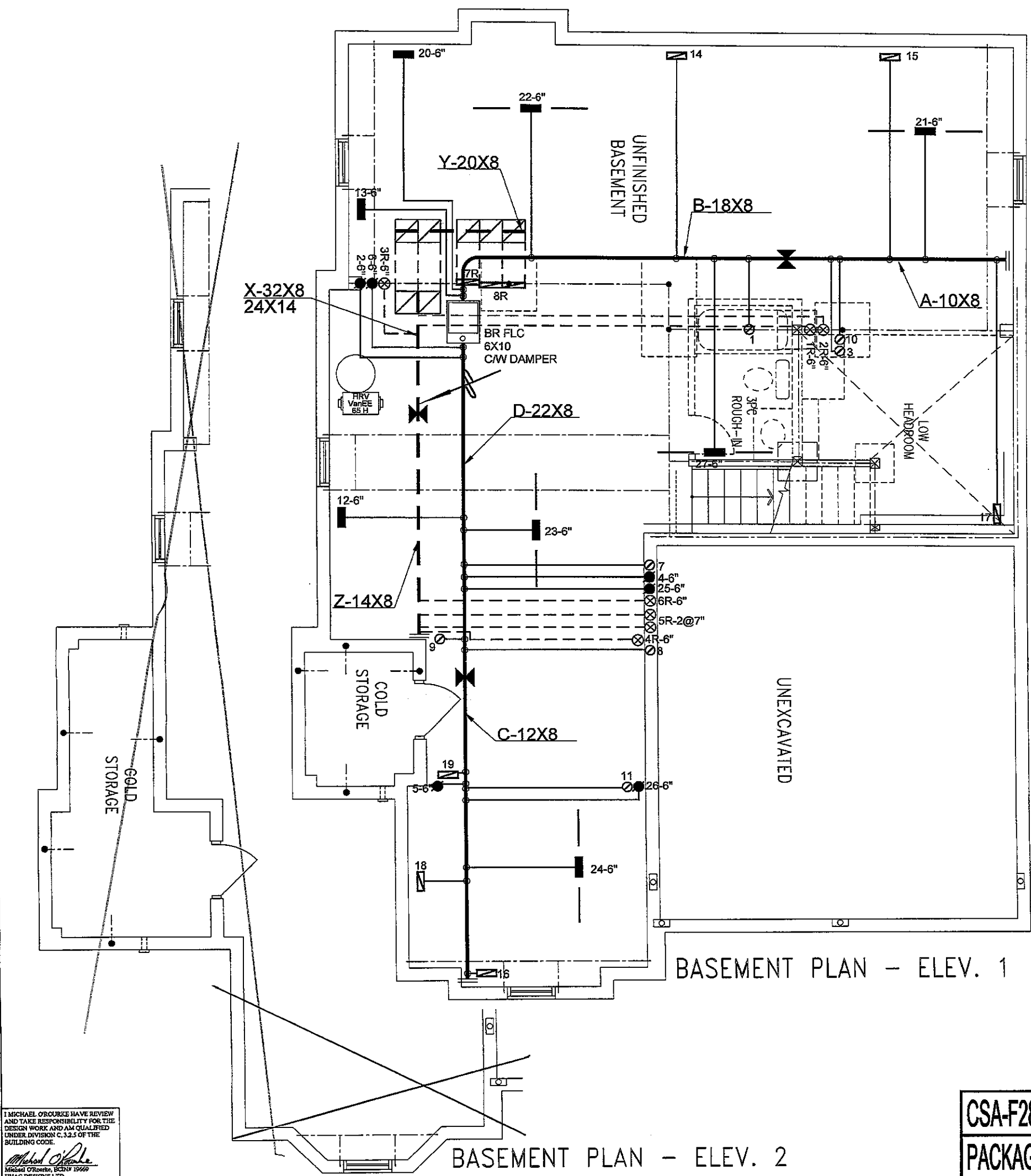
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description			
Province:	Ontario		
Region:	Hamilton		
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):	1095.4		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1460.1 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):	0.338		
Cooling Air Leakage Rate (ACH/H):	0.121		

TYPE: MOUNTAINASH 11S
LO# 85976

PARTIAL BASEMENT PLAN
DECK CONDITION- EL. 1 & 2



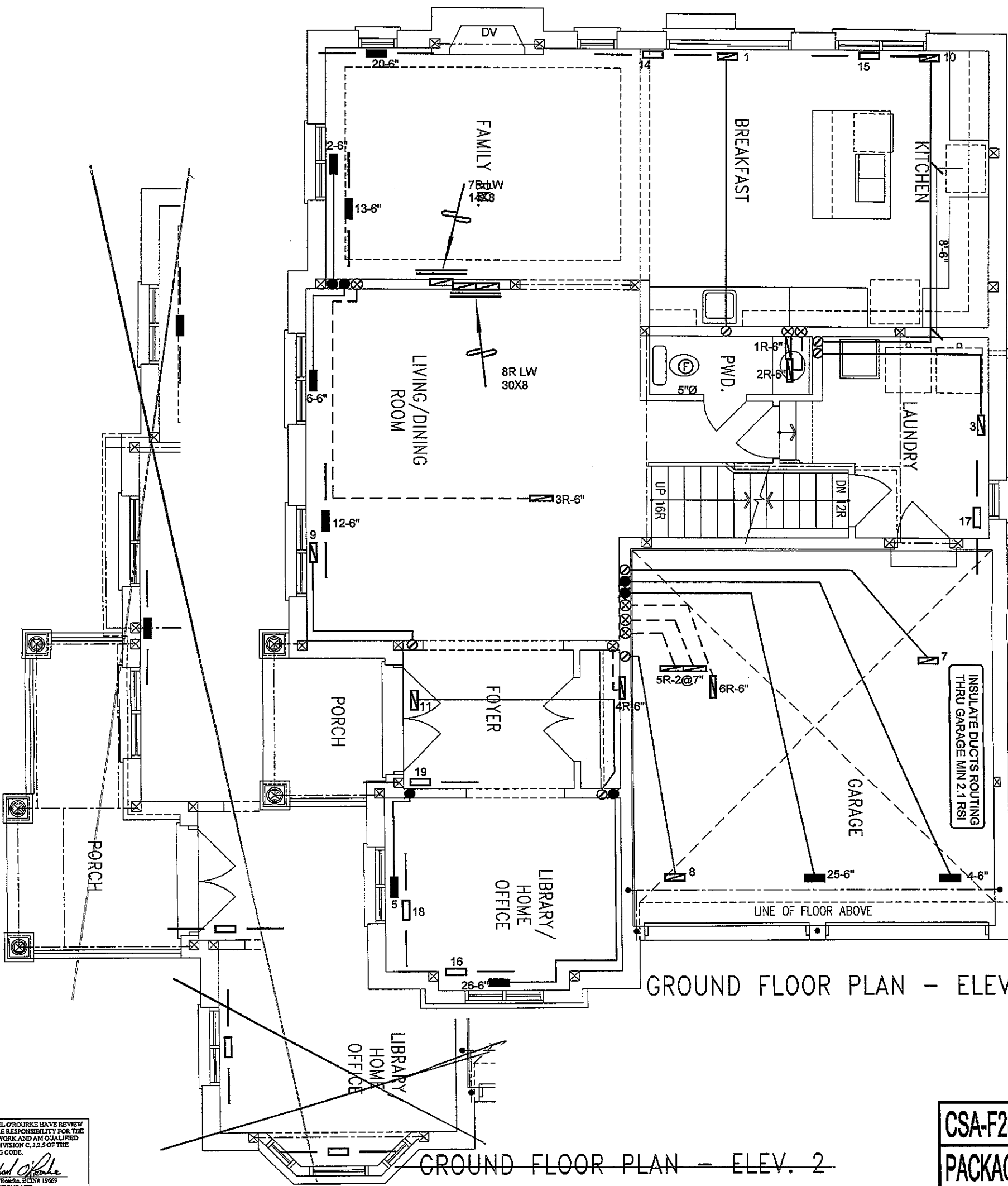
I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.3 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

HVAC LEGEND						REVISIONS		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Description	Date
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE	3.		
	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			

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Client GREENPARK HOMES Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO LOT 98 MOUNTAINASH 11S 2985 sqft	 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 55362 BTU/H UNIT DATA MAKE GOODMAN MODEL GMEC960804CNA INPUT 80 MBTU/H OUTPUT 76.8 MBTU/H COOLING 3.5 TONS FAN SPEED 1504 cfm @ 0.5" w.c.	# OF RUNS S/A R/A FANS 3RD FLOOR 2ND FLOOR 13 6 3 1ST FLOOR 9 2 2 BASEMENT 5 1 0	Sheet Title BASEMENT HEATING LAYOUT Date APRIL/2020 Scale 3/16" = 1'-0" BCIN# 19669 LO# 85976	
				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	



GROUND FLOOR PLAN - ELEV. 1

GROUND FLOOR PLAN - ELEV. 2

CSA-F280-12
PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	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

No.	Description	Date
3.		
2.		
1.		
No.		

REVISIONS

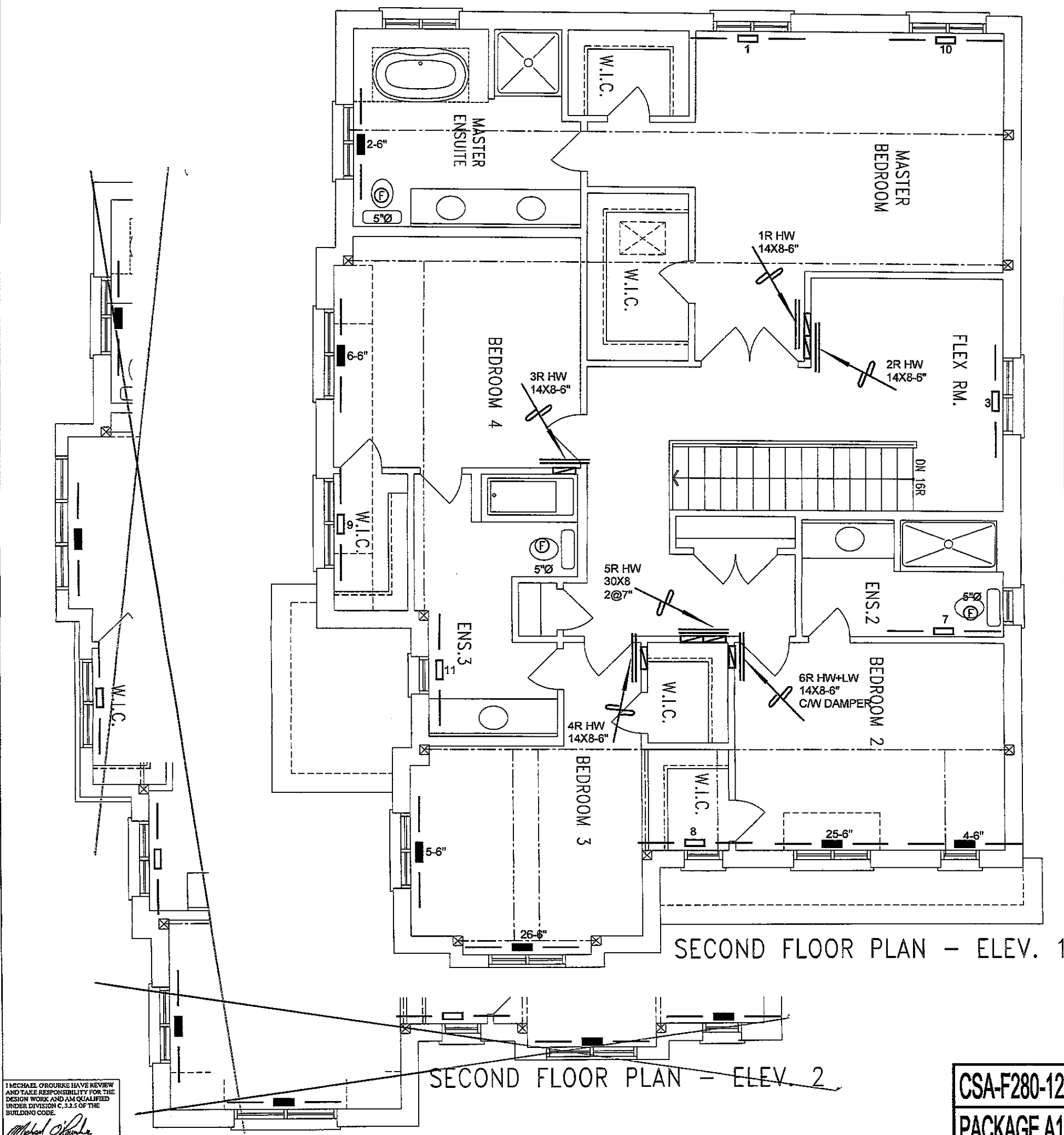
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Client
GREENPARK HOMES
Project Name
**RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO**
Lot 98
MOUNTAINASH 11S 2985 sqft

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.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**
Date **APRIL/2020**
Scale **3/16" = 1'-0"**
BCIN# 19669
LO# 85976



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

CSA-F280-12
PACKAGE A1

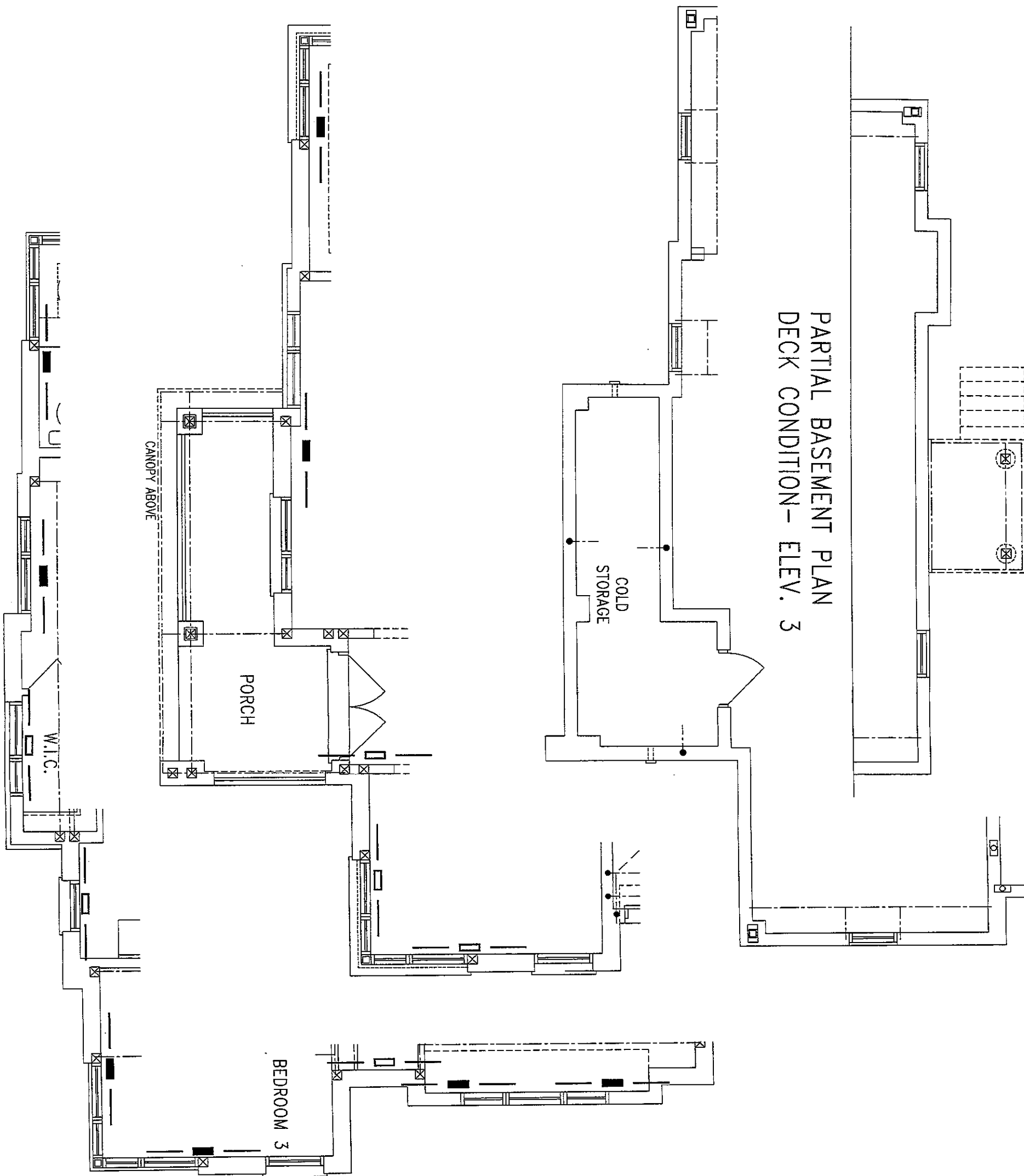
HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	
	SUPPLY AIR BOOT ABOVE		8" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS	
								Description	Date

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Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO LOT 98 MOUNTAINASH 11S 2985 sqft			Date APRIL/2020 Scale 3/16" = 1'-0" BCIN# 19669 LO# 85976	

GROUND FLOOR PLAN - ELEV. 3

BASEMENT PLAN - ELEV. 3



SECOND FLOOR PLAN - ELEV. 3

CSA-F280-12
PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	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

REVISIONS

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Client
GREENPARK HOMES
Project Name
**RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO**
LOT 98
MOUNTAINASH 11S 2985 sqft

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Sheet Title
**THIRD FLOOR
HEATING
LAYOUT**
Date
APRIL/2020
Scale
3/16" = 1'-0"
BCIN# 19669
LO# **85976**