

SITE NAME: RUSSEL GARDENS PH 4				OPT GROUND				DATE: Apr-21				WINTER NATURAL AIR CHANGE RATE 0.338				HEAT LOSS ΔT °F. 71				CSA-F280-12														
BUILDER: GREENPARK HOMES				TYPE: SPRINGFIELD 11				GFA: 3625				LO# 90171				SUMMER NATURAL AIR CHANGE RATE 0.121				HEAT GAIN AT °F. 43				SB-12 PACKAGE A1										
ROOM USE		MBR		ENS		BED-2		BED-3		BED-4		ENS-2		HALL		FLB-5		ENS-3		G-ENS														
EXP. WALL		40		30		31		36		9		6		8		12		13		9														
CLG. HT.		9		9		9		9		9		9		9		9		9		10														
FACTORS																																		
GRS.WALL AREA		360		270		279		324		81		54		72		108		117		90														
GLAZING		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN														
NORTH		19.8	16.0	0	0	0	7	138	112	0	0	0	0	0	0	16	315	256	0	0	0	0	0	0	0	0	0	0	0	0	0			
EAST		19.8	41.6	0	0	0	0	0	0	50	988	2078	41	810	1704	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
SOUTH		19.8	24.9	24	474	598	0	0	0	0	0	0	11	217	274	26	514	847	0	0	0	0	0	0	32	633	797	31	613	772	0	0	0	0
WEST		19.8	41.6	48	949	1984	28	554	1163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SKYLT.		34.6	101.5	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	0	0		
DOORS		23.6	4.3	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	0	0		
NET EXPOSED WALL		4.1	0.8	288	1194	216	236	974	177	229	949	172	272	1128	204	65	228	41	45	187	34	56	232	42	76	315	57	86	357	65	90	373	68	
NET EXPOSED BSMT WALL ABOVE GR		3.3	0.6	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	0	0		
EXPOSED CLG		1.2	0.6	375	447	220	191	228	112	215	256	126	226	269	133	165	197	97	121	144	71	152	181	89	286	341	168	126	150	74	0	0	0	
NO ATTIC EXPOSED CLG		2.6	1.3	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	0	0		
EXPOSED FLOOR		2.4	0.4	0	0	0	0	0	0	215	509	92	0	0	0	0	0	0	121	287	52	74	178	32	0	0	0	0	0	0	0	0	0	
BASEMENT/CRAWL HEAT LOSS																																		
SLAB ON GRADE HEAT LOSS																																		
SUBTOTAL HT LOSS				3064		1894				2703		2425				939		795				905		1289		1120				373				
SUB TOTAL HT GAIN				3029		1564				2468		2315		939		786		795		531		905		1289		1022		911				68		
LEVEL FACTOR / MULTIPLIER		0.20		0.26		0.20		0.26		0.20		0.26		0.20		0.26		0.20		0.26		0.20		0.26		0.20		0.26		0.30		0.42		
AIR CHANGE HEAT LOSS				811		501				715		641		248		210		239		341		295		341		295		156				156		
AIR CHANGE HEAT GAIN				202		104				165		165		52		35		28		68				68		61				5				
DUCT LOSS		0		0		0				342		0		0		101		114		0		0		0		0		0		0		0		
DUCT GAIN				0		0				354		0		0		57		45		0		0		0		0		0		0		0		
HEAT GAIN PEOPLE		240		2	480	0	0			1	240	1	240	1	240	0	0	0	0	0	1	240	0	0	0	0	0	0	0	0	0	0		
HEAT GAIN APPLIANCES/LIGHTS				667		0				667		667		667		667		667		667		667		667		667		667		667		667		
TOTAL HT LOSS BTU/H				3875		2395				3760		3066		4389		1187		1106		1289		1629		1416		529								
TOTAL HT GAIN x 1.3 BTU/H				5891		2169				5062		4389		2268		810		639		2596		1253		94										

ROOM USE	EXP. WALL		CLG. HT.		FAM		LV/DN		KT/BF		GUEST		LND		W/R		FOY		MUD		WOD		BAS	
	34		25		10		40		10		33		9		6		23		24		51		192	
	10		10				10		10		10		9		10		11		11		9		9	
GRS.WALL AREA	19.8		16.0		0		0		0		0		8		158		128		7		138		112	
GLAZING	19.8		41.6		0		0		0		55		1087		2285		0		0		0		0	
NORTH	19.8		24.9		32		633		797		68		1344		1693		0		0		0		0	
EAST	19.8		41.6		63		1245		2618		0		0		0		69		1364		2867		0	
SOUTH	19.8		41.6		0		0		0		0		0		0		0		0		0		0	
WEST	19.8		41.6		0		0		0		0		0		0		0		0		0		0	
SKYLT.	34.6		101.5		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	
NET EXPOSED WALL	4.1		0.8		245		1016		184		182		755		137		306		1259		230		261	
NET EXPOSED BSMT WALL ABOVE GR	3.3		0.6		0		0		0		0		0		0		0		0		0		0	
EXPOSED CLG	1.2		0.6		0		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		0	
EXPOSED FLOOR	2.4		0.4		0		0		0		0		0		0		0		0		0		0	
BASEMENT/CRAWL HEAT LOSS					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	
SUBTOTAL HT LOSS					2894				2099		3219		2446		632		358		1956		1590		1220	
SUB TOTAL HT GAIN					3589		1830		3203		2830		267		152		355		375		677		546	
LEVEL FACTOR / MULTIPLIER	0.30		0.42		0.30		0.42		0.30		0.42		0.20		0.26		0.30		0.42		0.30		0.42	
AIR CHANGE HEAT LOSS			1212		879		1348		1025		167		189		18		10		24		0		0	
AIR CHANGE HEAT GAIN			240		122		214		189		18		10		24		0		0		0		0	
DUCT LOSS			0		0		0		0		0		0		0		0		0		0		0	
DUCT GAIN			0		0		0		0		0		0		0		0		0		0		0	
HEAT GAIN PEOPLE	240		0		0		0		0		1		240		0		0		0		0		0	
HEAT GAIN APPLIANCES/LIGHTS			667		667		667		667		667		667		667		667		667		667		667	
TOTAL HT LOSS BTU/H			4106		2978		4567		3471		800		1237		210		2776		2256		1220		18951	
TOTAL HT GAIN x 1.3 BTU/H			5857		3404		5309		5104		1237		210		2776		492		529		880		616	

CITY OF HAMILTON
PLANNING & DEVELOPMENT DEPARTMENT
BUILDING DIVISION

SEP 15 2021

DATE
DATE

TOTAL HEAT GAIN BTU/H: 49257 TONS: 4.10 LOSS DUE TO VENTILATION LOAD BTU/H: 2460 STRUCTURAL HEAT LOSS: 61856 TOTAL COMBINED HEAT LOSS BTU/H: 64315

SITE NAME: RUSSEL GARDENS PH 4
BUILDER: GREENPARK HOMES

OPT GROUND
TYPE: SPRINGFIELD 11

DATE: Apr-21

GFA: 3625 LO# 90171

HEATING CFM 1504 COOLING CFM 1504
TOTAL HEAT LOSS 61,856 TOTAL HEAT GAIN 48,811
AIR FLOW RATE CFM 24.31 AIR FLOW RATE CFM 30.81

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

#*GOODMAN
GMEC960804CNA 80

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

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	15	12	5
R/A	0	0	6	3	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 dif 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

FAN SPEED
LOW 868
MEDLOW 978
MEDIUM 1112
MEDIUM HIGH 1504
HIGH 1615

DESIGN CFM = 1504
CFM @ 5" E.S.P.

TEMPERATURE RISE 47 °F

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	ENS	BED-2	BED-3	BED-4	ENS-2	HALL	FL/B-5	MBR	ENS-3	FAM	LV/DN	KT/BF	KT/BF	GUEST	LND	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.94	1.20	1.20	1.88	1.53	1.19	0.55	1.26	1.63	1.94	1.42	2.05	1.49	2.28	2.28	1.74	0.80	0.51	2.78	2.26	4.03	4.03	4.03	4.03
CFM PER RUN HEAT	47	29	29	46	37	29	13	31	40	47	34	50	36	56	56	42	19	12	67	55	98	98	98	98
RM GAIN MBH	2.85	1.08	1.08	2.53	2.19	2.27	0.40	0.64	2.60	2.85	1.26	2.93	1.70	2.65	2.65	2.55	1.24	0.21	0.49	0.52	0.34	0.34	0.34	0.34
CFM PER RUN COOLING	88	33	33	78	68	70	12	20	80	88	39	90	52	82	82	79	38	6	15	16	10	10	10	10
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	52	30	32	64	75	70	56	20	46	43	66	39	36	24	15	64	25	8	57	18	14	13	32	35
EQUIVALENT LENGTH	120	200	140	160	160	200	140	110	150	180	170	170	130	80	110	110	160	100	170	100	90	100	180	130
TOTAL EFFECTIVE LENGTH	172	230	172	224	235	270	198	130	196	223	236	209	166	104	125	174	185	108	227	118	104	113	192	165
ADJUSTED PRESSURE	0.09	0.07	0.1	0.08	0.07	0.06	0.09	0.13	0.09	0.07	0.08	0.1	0.16	0.13	0.1	0.09	0.16	0.08	0.15	0.16	0.14	0.08	0.1	0.1
ROUND DUCT SIZE	6	4	5	6	6	6	4	4	6	6	5	6	6	6	6	6	4	4	5	5	6	6	6	6
HEATING VELOCITY (ft/min)	240	333	213	235	189	148	149	356	204	240	250	255	184	286	286	214	218	138	492	404	500	500	500	500
COOLING VELOCITY (ft/min)	449	379	242	398	347	357	138	229	408	449	286	459	265	418	418	403	436	69	110	117	51	51	51	51
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	E	E	B	A	A	B	E	C	C	B	C	C	D	D	A	E	E	A	E	D	D	C	C

RUN #	25	26	27	28	29	30	31	32
ROOM NAME	BAS	BED-2	BED-3	FAM	LV/DN	GUEST	ENS-2	G-ENS
RM LOSS MBH	4.03	1.88	1.53	2.05	1.49	1.74	0.55	0.53
CFM PER RUN HEAT	98	46	37	50	36	42	13	13
RM GAIN MBH	0.34	2.53	2.19	2.93	1.70	2.55	0.40	0.09
CFM PER RUN COOLING	10	78	68	90	52	79	12	3
ADJUSTED PRESSURE	0.16	0.17	0.17	0.16	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH	48	70	83	39	47	56	54	47
EQUIVALENT LENGTH	100	170	180	150	180	120	170	120
TOTAL EFFECTIVE LENGTH	148	240	263	189	227	176	224	167
ADJUSTED PRESSURE	0.11	0.07	0.07	0.09	0.08	0.1	0.08	0.1
ROUND DUCT SIZE	6	6	6	6	6	4	4	4
HEATING VELOCITY (ft/min)	500	235	189	255	184	214	149	149
COOLING VELOCITY (ft/min)	51	398	347	459	265	403	138	34
OUTLET GRILL SIZE	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10
TRUNK	B	B	A	C	C	A	B	A

SUPPLY AIR TRUNK SIZE

TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	267	0.06	9.2	14	x 8 343
TRUNK B	517	0.06	11.8	18	x 8 517
TRUNK C	502	0.07	11.2	16	x 8 565
TRUNK D	1327	0.06	16.8	32	x 8 746
TRUNK E	175	0.07	7.5	8	x 8 394
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 G	0	0.00	0	0	x 8 0
TRUNK H	0	0.00	0	0	x 8 0
TRUNK I	0	0.00	0	0	x 8 0
TRUNK J	0	0.00	0	0	x 8 0
TRUNK K	0	0.00	0	0	x 8 0
TRUNK L	0	0.00	0	0	x 8 0

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	135	155	155	75	85	115	155	330	85	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	51	80	68	72	61	62	40	38	63	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	235	195	175	220	175	215	210	205	165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	286	255	243	292	236	277	250	243	228	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.05	0.06	0.06	0.05	0.06	0.05	0.06	0.06	0.06	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
ROUND DUCT SIZE	7.5	7.5	7.5	6	6	7	7.5	9.9	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	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	X	X	X
INLET GRILL SIZE	14	14	14	14	14	14	14	30	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: SPRINGFIELD 11
SITE NAME: RUSSEL GARDENS PH 4

LO # 90171
OPT GROUND

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	5 @ 10.6 cfm	53 cfm
Kitchen & Bathrooms	6 @ 10.6 cfm	63.6 cfm
Other Rooms	5 @ 10.6 cfm	53.0 cfm
Table 9.32.3.A.	TOTAL	212.0 cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED		9.32.3.4.(1)
6 Bedrooms		
As Per Ashrea 62.2 Dwelling- Unit Ventilation		
4.1.1 Total Ventilation Rate		
$Q_{tot} = 0.03A_{floor} + 7.5(N_{br} + 1)$		
TOTAL		161.3 cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	212	cfm
Less Principal Ventil. Capacity	161.3	cfm
Required Supplemental Capacity	50.7	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE G2400H ECM	Location: BSMT
161.3 cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
161.3 CFM	X 71 F	X 1.08	X	0.20

SUPPLEMENTAL FANS		BY INSTALLING CONTRACTOR		
Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	☒	3.5
ENS-2	BY INSTALLING CONTRACTOR	50	☒	3.5
ENS-3	BY INSTALLING CONTRACTOR	50	☒	3.5
W/R	BY INSTALLING CONTRACTOR	50	☒	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE G2400H ECM		
210	cfm high	50 cfm low
80	% 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:	April-21

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

LO#: 90171

Model: SPRINGFIELD 11

Builder: GREENPARK HOMES

Date: 06/04/2021

Volume Calculation
Air Change & Delta T Data
House Volume

Level	Floor Area (ft ²)	Floor Height (ft)	Volume (ft ³)
Bsmt	1624	9	14616
First	1624	10	16240
Second	2001	9	18009
Third	0	9	0
Fourth	0	9	0
Total:			48,865.0 ft ³
Total:			1383.7 m ³

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

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-17	39	71
Summer DTDc	24	31	7	13

5.2.3.1 Heat Loss due to Air Leakage
6.2.6 Sensible Gain due to Air Leakage

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

$$0.338 \times 384.36 \times 39^\circ\text{C} \times 1.2 = 6112 \text{ W}$$

$$= 20854 \text{ Btu/h}$$

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

$$= 0.121 \times 384.36 \times 7^\circ\text{C} \times 1.2 = 397 \text{ W}$$

$$= 1354 \text{ Btu/h}$$

5.2.3.2 Heat Loss due to Mechanical Ventilation
6.2.7 Sensible heat Gain due to Ventilation

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

$$161 \text{ CFM} \times 71^\circ\text{F} \times 1.08 \times 0.20 = 2460 \text{ Btu/h}$$

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

$$161 \text{ CFM} \times 13^\circ\text{F} \times 1.08 \times 0.20 = 446 \text{ Btu/h}$$

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

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

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 / HL _{level})
1	0.5	20,854	9,744	1.070
2	0.3		14,935	0.419
3	0.2		15,766	0.265
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

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: SPRINGFIELD 11	OPT GROUND	BUILDER: GREENPARK HOMES
SFQT: 3625	LO# 90171	SITE: RUSSEL GARDENS PH 4

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:	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):	48865.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
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: 55.0 ft	WIDTH: 41.0 ft	EXPOSED PERIMETER:	192.0 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	96%	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

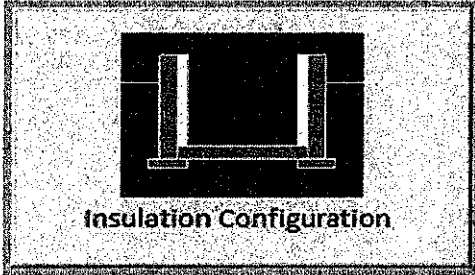
INDIVIDUAL BCIN: 19669

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):	16.8	
Floor Width (m):	12.5	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	2.0	
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):	1888	

TYPE: SPRINGFIELD 11

OPT GROUND

LO# 90171

Air Infiltration Residential Load Calculator

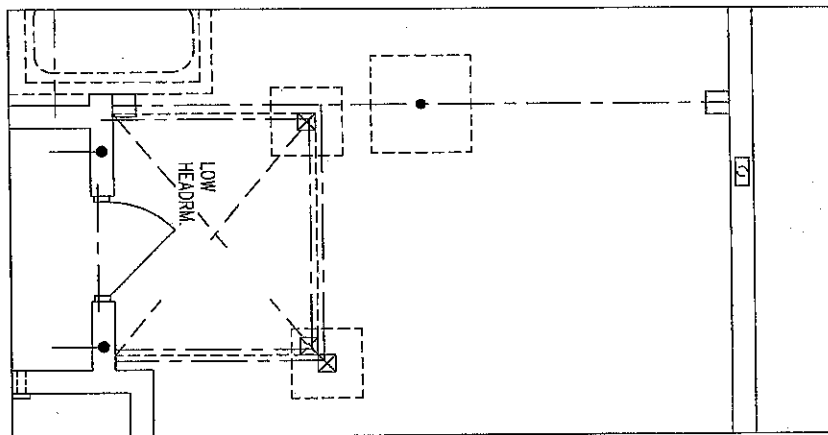
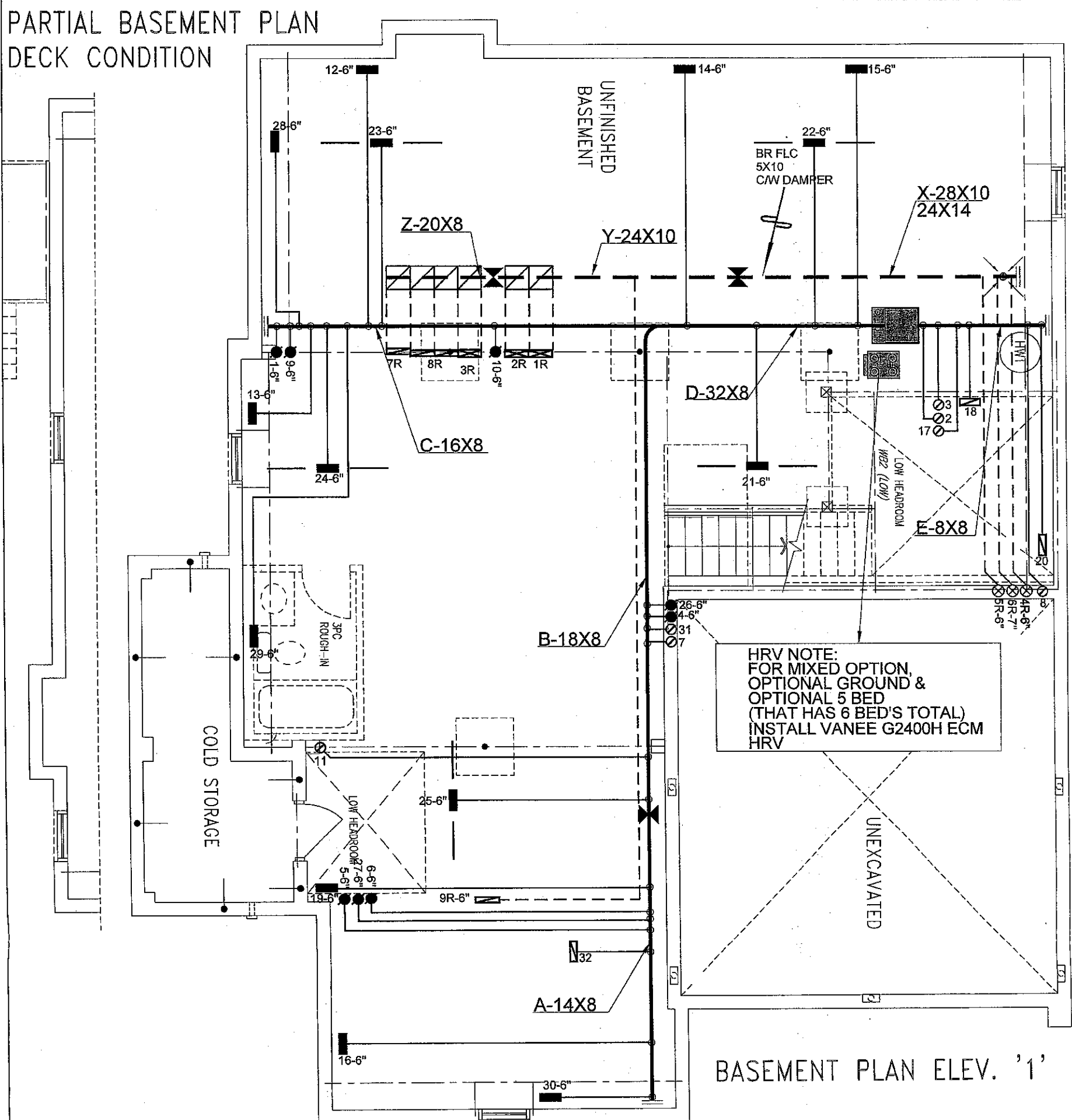
Supplemental tool for CAN/CSA-F280

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):	1383.7			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1844.5 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	76.1	76.1		
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: SPRINGFIELD 11
LO# 90171

OPT GROUND

PARTIAL BASEMENT PLAN
DECK CONDITION



PART. BSMT. PLAN w/
OPT. SUNKEN FOYER
CONDITION

WOD
CSA-F280-12
PACKAGE A1

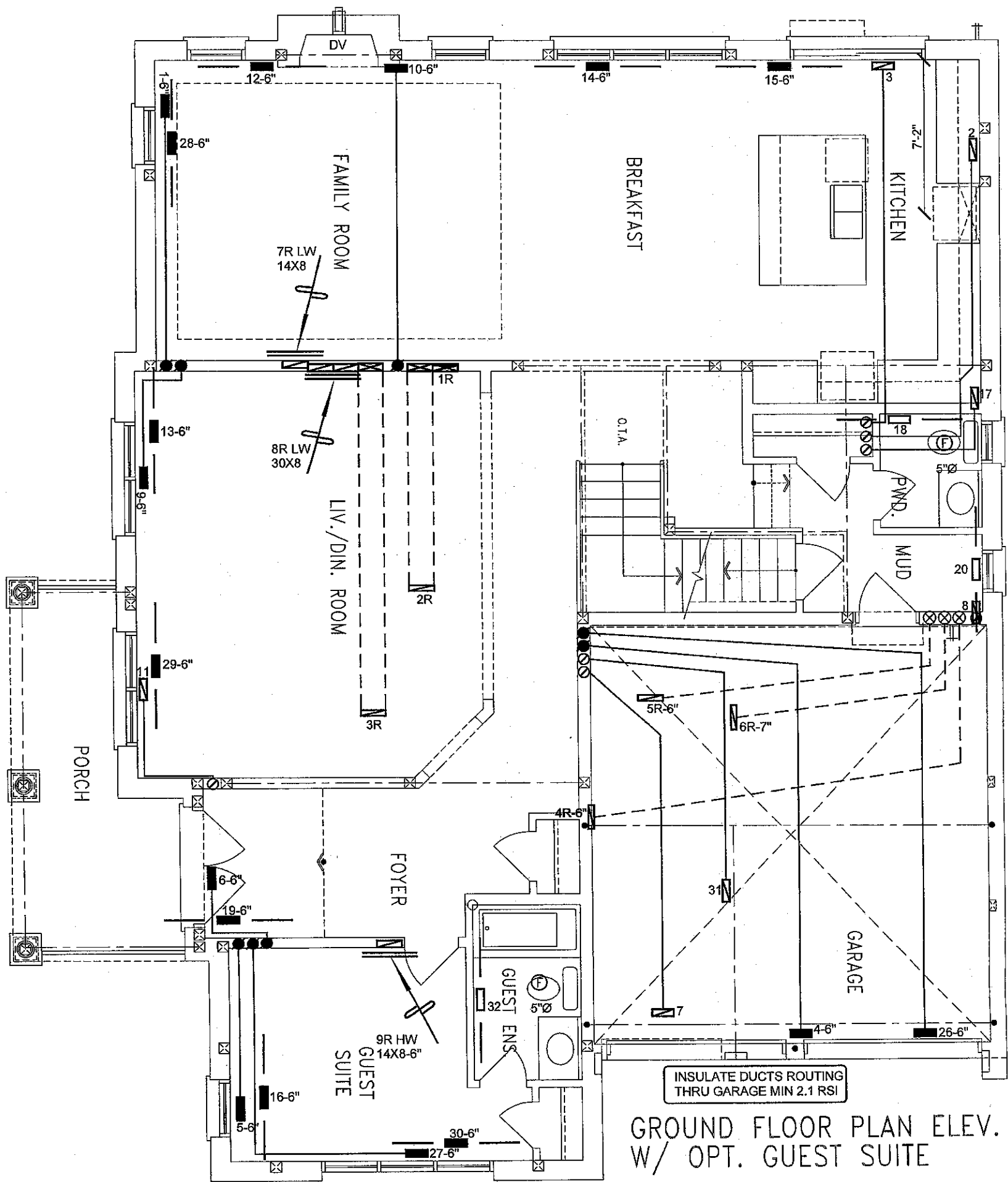
I MICHAEL O'ROURKE HAVE REVIEW
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C, 3.2.5 OF THE
BUILDING CODE.

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

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.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

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ONTARIO BUILDING CODE		HVACDESIGNS 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		HEAT LOSS 64315 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title	
Client GREENPARK HOMES				MAKE GOODMAN	3RD FLOOR						BASEMENT HEATING LAYOUT
Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO		MODEL GMCE960804CNA	2ND FLOOR			15	6	4			
		INPUT 80 MBTU/H	1ST FLOOR			12	3	3			
OPT GROUND SPRINGFIELD 11 3625 sqft		OUTPUT 76.8 MBTU/H	BASEMENT			5	1	0	Date APR/2021		
		COOLING 4.0 TONS	ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5'0" UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A							Scale 3/16" = 1'-0"	
		FAN SPEED 1504 cfm @ 0.6" w.g.								BCIN# 19669	
				LO# 90171							



GROUND FLOOR PLAN ELEV. '1'
W/ OPT. GUEST SUITE

I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 32.5 OF THE BUILDING CODE.

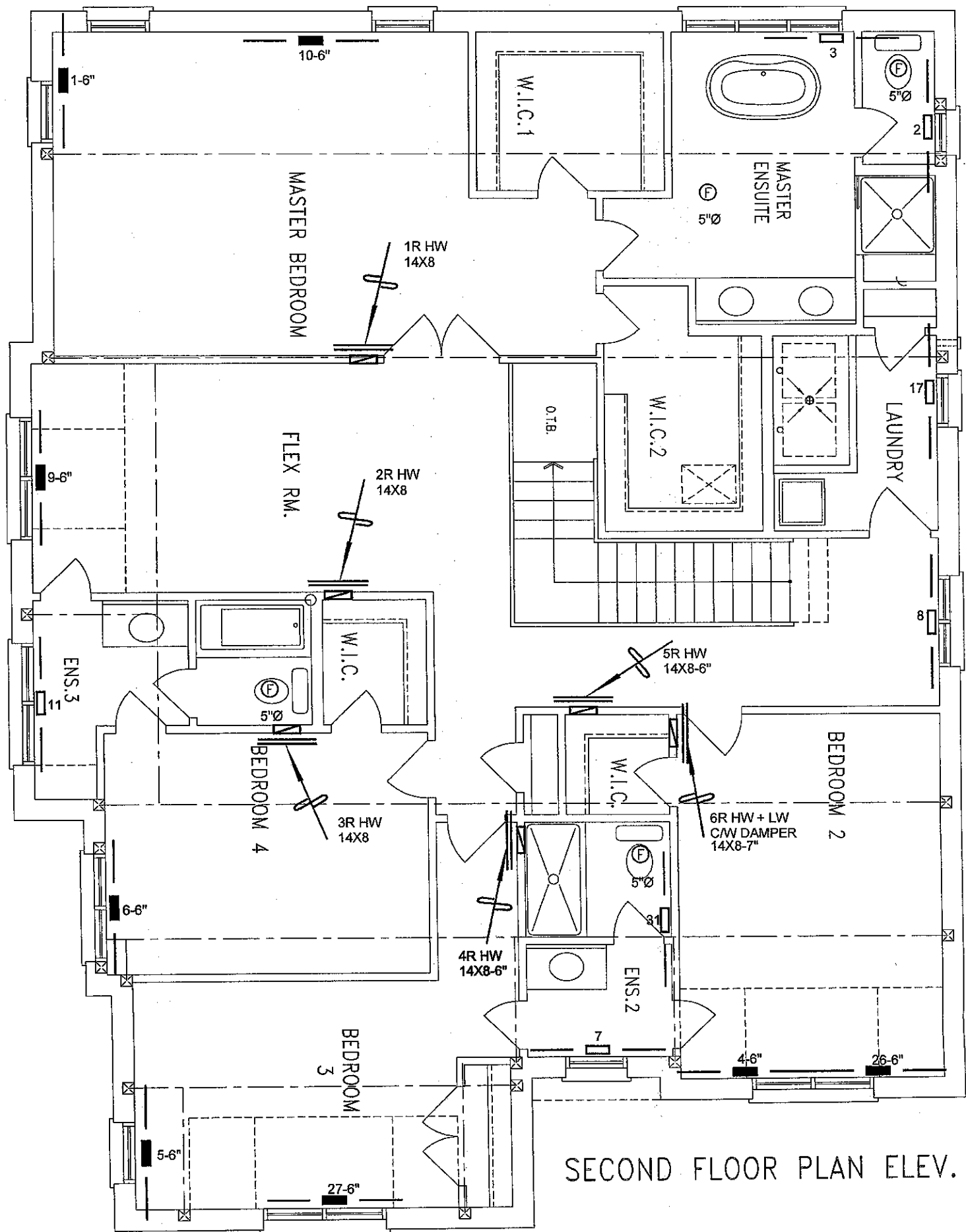
Michael O'Rourke
BCIN# 19669
HVAC DESIGNS LTD.

WOD
CSA-F280-12
PACKAGE A1

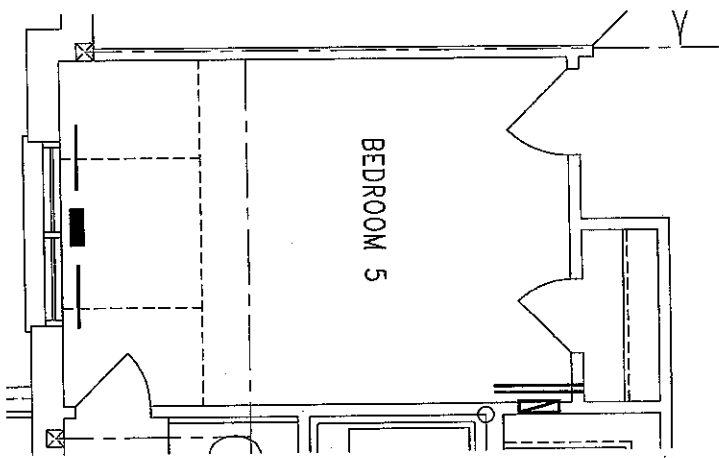
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	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		 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 RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date APR/2021	
OPT GROUND SPRINGFIELD 11 3625 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO#	90171



SECOND FLOOR PLAN ELEV. '1'



PART. SECOND FLOOR PLAN
W/ OPT. BEDROOM 5

WOD
CSA-F280-12
PACKAGE A1

I MICHAEL O'Rourke HAVE REVIEW
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C. 32.5 OF THE
BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

HVAC LEGEND						3.	
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	
						No.	Description
							Date

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Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date APR/2021	
OPT GROUND SPRINGFIELD 11 3625 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO# 90171	

SECOND FLOOR PLAN - ELEV. '3'

GROUND FLOOR PLAN - ELEV. '3'

BASEMENT PLAN - ELEV. '3'

COLD STORAGE

PORCH

WOD
CSA-F280-12
PACKAGE A1

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.

HVAC LEGEND						3.	
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	
						No.	Description
						Date	

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Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date APR/2021	
OPT GROUND SPRINGFIELD 11 3625 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO#	90171

SECOND FLOOR PLAN ELEV. '2'

GROUND FLOOR PLAN ELEV. '2'

BASEMENT PLAN - ELEV. '2'

COLD STORAGE

PORCH

ENS.3

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

WOD
CSA-F280-12
PACKAGE A1

HVAC LEGEND								3.		
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	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		
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Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO							Date APR/2021			
OPT GROUND SPRINGFIELD 11 3625 sqft							Scale 3/16" = 1'-0"			
							BCIN# 19669			
							LO# 90171			