

SITE NAME: RUSSEL GARDENS PHASE 3				LOT 156				DATE: Sep-20				WINTER NATURAL AIR CHANGE RATE 0.319				HEAT LOSS AT °F. 71				CSA-F280-12			
BUILDER: GREENPARK HOMES				TYPE: MOUNTAINASH 12				LO# 87555				SUMMER NATURAL AIR CHANGE RATE 0.114				HEAT GAIN AT °F. 13				SB-12 PACKAGE A1			
ROOM USE				MBR				WIC				S-ENS				WIC-3				FLEX			
EXP. WALL				42				25				6				5				16			
CLG. HT.				9				9				9				9				9			
FACTORS																							
GRS.WALL AREA	LOSS	GAIN		378				225				54				45				144			
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	0	0	7	138	112	0	0	0	0	0	0	0	0	0
EAST	19.8	41.6	0	0	0	0	0	0	0	0	0	0	0	0	10	198	416	0	0	0	0	0	0
SOUTH	19.8	24.9	0	0	0	27	534	672	0	0	0	0	0	0	0	0	0	42	830	1046	12	237	299
WEST	19.8	41.6	42	830	1745	24	474	597	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
DOORS	23.5	4.3	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	336	1393	253	174	721	131	72	298	54	47	195	35	35	145	26	102	423	77	33	137	25
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
EXPOSED CLG	1.2	0.6	348	415	204	150	179	88	105	125	62	111	132	65	46	55	27	235	280	138	47	56	28
NO ATTIC EXPOSED CLG	2.6	1.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	89	44	8	20	10
EXPOSED FLOOR	2.4	0.4	0	0	0	0	0	0	0	0	0	111	263	48	46	109	20	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0			0			0			0			0			0		0			
SLAB ON GRADE HEAT LOSS			0			0			0			0			0			0		0			
SUBTOTAL HT LOSS			2538			1908			424			729			507			1623		450			
SUB TOTAL HT GAIN			2202			1888			116			260			489			1306		361			
LEVEL FACTOR / MULTIPLIER	0.20	0.24		0.20	0.24		0.20	0.24		0.20	0.24	0.20	0.24		0.20	0.24		0.20	0.24		0.20	0.24	
AIR CHANGE HEAT LOSS			643			455			103			178			123			395		110			
AIR CHANGE HEAT GAIN			0			134			7			15			30			79		22			
DUCT LOSS			0			0			0			91			63			0		0			
DUCT GAIN			0			0			0			28			52			0		0			
HEAT GAIN PEOPLE	240		2			480			0			0			0			0		0			
HEAT GAIN APPLIANCES/LIGHTS						517			0			0			0			517		0			
TOTAL HT LOSS BTU/H			3281			2373			527			997			693			2018		560			
TOTAL HT GAIN x 1.3 BTU/H			4333			2604			180			394			741			2471		498			

ROOM USE			FAM		DIN		K/D		L/H		LND		WVR		FOY								WUB		BAS	
EXP. WALL			36		19		37		26		0		40		21								22		152	
CLG. HT.			11		11		11		11		9		12		11								8		8	
FACTORS																										
GRS.WALL AREA	LOSS	GAIN	396		209		407		286		0		480		231								176		760	
GLAZING	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	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	0	0	0	0	0	0	0	0	0	7	138	112	0	0	0	0	0	0	0	5	99
EAST	19.8	41.6	0	0	0	0	0	0	0	0	36	712	1496	0	0	0	0	0	0	0	0	0	0	5	99	208
SOUTH	19.8	24.9	32	633	797	58	1147	1444	0	0	16	316	398	0	0	0	0	6	119	149	0	0	0	10	198	249
WEST	19.8	41.6	28	554	1163	0	0	0	73	1443	3033	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
DOORS	23.5	4.3	0	0	0	0	0	0	0	0	0	0	0	20	469	85	40	936	170	20	469	85	20	469	85	20
NET EXPOSED WALL	4.1	0.8	336	1393	253	151	626	113	334	1385	251	234	970	176	0	453	1878	340	185	767	139	156	647	117	0	0
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	456	1524
EXPOSED CLG	1.2	0.6	0	0	0	0	0	0	0	0	0	73	87	43	0	0	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	24	61	30	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS																										
SLAB ON GRADE HEAT LOSS																										
SUBTOTAL HT LOSS																										
SUB TOTAL HT GAIN																										
LEVEL FACTOR / MULTIPLIER	0.30	0.37																								
AIR CHANGE HEAT LOSS																										
AIR CHANGE HEAT GAIN																										
DUCT LOSS																										
DUCT GAIN																										
HEAT GAIN PEOPLE	240																									
HEAT GAIN APPLIANCES/LIGHTS																										
TOTAL HT LOSS BTU/H																										
TOTAL HT GAIN x 1.3 BTU/H																										

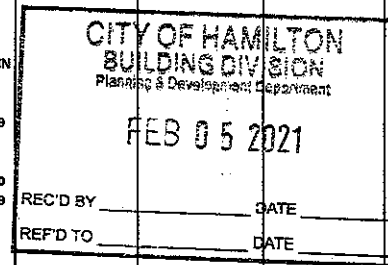
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Planning & Development Department

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TOTAL HEAT GAIN BTU/H: 40911 TONS: 3.41 LOSS DUE TO VENTILATION LOAD BTU/H: 1515 STRUCTURAL HEAT LOSS: 53417 TOTAL COMBINED HEAT LOSS BTU/H: 54932

SITE NAME: RUSSEL GARDENS PHASE 3
BUILDER: GREENPARK HOMES

LOT 156
TYPE: MOUNTAINASH 12

DATE: Sep-20

GFA: 3103

LO# 87593

HEATING CFM 1504
TOTAL HEAT LOSS 53,417
AIR FLOW RATE CFM 28.16

COOLING CFM 1504
TOTAL HEAT GAIN 40,636
AIR FLOW RATE CFM 37.01

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

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

#GOODMAN
GMCE960804CNA 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 @ .5" E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	15	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	WIC	BED-2	BED-3	BED-4	S-ENS	WIC-3	FLEX	MBR	ENS-3	FAM	DIN	K/D	K/D	L/H	LND	W/R	FOY	L/H	BAS	BAS	BAS	BAS
RM LOSS MBH	1.64	2.37	0.53	1.49	1.58	1.27	0.50	0.69	2.02	1.64	0.56	1.77	2.43	1.94	1.94	1.41	0.11	3.41	2.50	1.41	3.42	3.42	3.42	3.42
CFM PER RUN HEAT	45	67	15	42	44	36	14	20	57	46	16	50	68	55	55	40	3	96	70	40	96	96	96	96
RM GAIN MBH	2.17	2.60	0.16	1.84	2.21	1.79	0.20	0.74	2.47	2.17	0.50	1.86	2.82	2.60	2.60	1.78	0.73	0.74	0.63	1.78	0.44	0.44	0.44	0.44
CFM PER RUN COOLING	80	96	6	68	82	66	7	27	91	80	18	69	104	96	96	66	27	27	23	66	16	16	16	16
ADJUSTED PRESSURE	0.17	0.16	0.17	0.17	0.16	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.16	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	37	41	31	31	54	57	46	48	41	28	57	32	30	23	16	49	19	19	42	35	20	43	31	35
EQUIVALENT LENGTH	170	120	190	190	140	180	170	130	150	120	210	140	130	120	110	130	110	160	180	130	130	140	150	180
TOTAL EFFECTIVE LENGTH	207	161	221	221	194	237	216	178	191	148	267	172	160	143	126	179	129	179	222	165	150	183	181	215
ADJUSTED PRESSURE	0.08	0.1	0.08	0.08	0.08	0.07	0.08	0.1	0.08	0.12	0.06	0.1	0.1	0.11	0.13	0.1	0.13	0.09	0.08	0.1	0.11	0.09	0.09	0.08
ROUND DUCT SIZE	6	6	4	5	6	6	4	4	6	5	4	5	6	6	5	4	6	5	5	6	6	6	6	6
HEATING VELOCITY (ft/min)	235	342	172	308	224	184	161	229	291	338	184	367	347	280	280	294	34	489	514	294	489	489	489	489
COOLING VELOCITY (ft/min)	408	489	69	499	418	337	80	310	464	587	207	507	530	489	489	485	310	138	169	485	82	82	82	82
OUTLET GRILL SIZE	4X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	C	C	B	B	A	B	B	C	D	A	C	C	D	D	A	E	B	A	A	D	C	C	A

RUN #	25	26	27	28	29
ROOM NAME	BAS	BED-3	BED-4	S-ENS	FAM
RM LOSS MBH	3.42	1.58	1.27	0.50	1.77
CFM PER RUN HEAT	96	44	36	14	50
RM GAIN MBH	0.44	2.21	1.79	0.20	1.86
CFM PER RUN COOLING	16	82	66	7	69
ADJUSTED PRESSURE	0.16	0.16	0.17	0.17	0.17
ACTUAL DUCT LGH	45	49	55	46	29
EQUIVALENT LENGTH	120	170	200	110	150
TOTAL EFFECTIVE LENGTH	165	219	255	156	179
ADJUSTED PRESSURE	0.1	0.07	0.07	0.11	0.1
ROUND DUCT SIZE	6	6	6	4	5
HEATING VELOCITY (ft/min)	489	224	184	161	367
COOLING VELOCITY (ft/min)	82	418	337	80	507
OUTLET GRILL SIZE	4X10	4X10	4X10	3X10	3X10
TRUNK	A	B	A	B	C

CITY OF HAMILTON
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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	430	0.06	11	14	x	8	553	TRUNK G	0	0.00	0	0	x	8	0	0.05	0	0	x	8	0						
TRUNK B	704	0.06	13.2	20	x	8	634	TRUNK H	0	0.00	0	0	x	8	0	0.05	0	0	x	8	0						
TRUNK C	499	0.08	10.8	14	x	8	642	TRUNK I	0	0.00	0	0	x	8	0	0.05	0	0	x	8	0						
TRUNK D	298	0.08	8.9	10	x	8	536	TRUNK J	0	0.00	0	0	x	8	0	0.05	0	0	x	8	0						
TRUNK E	800	0.08	12.9	20	x	8	720	TRUNK K	0	0.00	0	0	x	8	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	0.05	0	0	x	8	0						

RETURN AIR #	1	2	3	4	5	6	7	8							BR							
AIR VOLUME	95	260	85	75	75	85	155	435	0	0	0	0	0	0	239	1504	0.05	18.4	32	x	10	677
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	935	0.05	15.4	28	x	8	601
ACTUAL DUCT LGH	34	49	56	57	63	64	33	31	1	1	1	1	1	1	15	590	0.05	12.9	20	x	8	531
EQUIVALENT LENGTH	155	225	175	220	215	195	200	195	0	0	0	0	0	0	160	DROP	0.05	18.4	24	x	14	645
TOTAL EFFECTIVE LH	189	274	231	277	278	259	233	226	1	1	1	1	1	1	175							
ADJUSTED PRESSURE	0.08	0.05	0.06	0.05	0.05	0.06	0.06	0.07	14.80	14.80	14.80	14.80	14.80	14.80	0.08							
ROUND DUCT SIZE	5.8	9.5	6	6	6	6	7.5	10.6	0	0	0	0	0	0	8.2							
INLET GRILL SIZE	8	8	8	8	8	8	8	8	0	0	0	0	0	0	8							
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X							
INLET GRILL SIZE	14	30	14	14	14	14	14	30	0	0	0	0	0	0	24							

TYPE: MOUNTAINASH 12
SITE NAME: RUSSEL GARDENS PHASE 3

LO # 87593
LOT 168

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES	9.32.3.1(1)
a) ☒ Direct vent (sealed combustion) only	
b) ☐ Positive venting Induced draft (except fireplaces)	
c) ☐ Natural draft, B-vent or induced draft gas fireplace	
d) ☐ Solid Fuel (including fireplaces)	
e) ☐ No Combustion Appliances	

HEATING SYSTEM
☒ Forced Air ☐ Non Forced Air
☐ Electric Space Heat

HOUSE TYPE	9.32.1(2)
☒ I Type a) or b) appliance only, no solid fuel	
☐ II Type I except with solid fuel (including fireplaces)	
☐ III Any Type c) appliance	
☐ IV Type I, or II with electric space heat	
☐ Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS	O.N.H.W.P.
☐ 1 Exhaust only/Forced Air System	
☐ 2 HRV with Ducting/Forced Air System	
☒ 3 HRV Simplified/connected to forced air system	
☐ 4 HRV with Ducting/non forced air system	
☐ Part 6 Design	

TOTAL VENTILATION CAPACITY	9.32.3.3(1)
Basement + Master Bedroom	2 @ 21.2 cfm 42.4 cfm
Other Bedrooms	3 @ 10.6 cfm 31.8 cfm
Kitchen & Bathrooms	5 @ 10.6 cfm 53 cfm
Other Rooms	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	79.5 cfm

SUPPLEMENTAL VENTILATION CAPACITY	9.32.3.6
Total Ventilation Capacity	190.8 cfm
Less Principal Ventll. 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 $\Delta T^{\circ}F$ FACTOR % LOSS
79.5 CFM X 71 F X 1.08 X 0.25

SUPPLEMENTAL FANS	PANASONIC
Location Model cfm HVI Sones	
ENS FV-05-11VK1 50 ☒ 0.3	
S-ENS FV-05-11VK1 50 ☒ 0.3	
ENS-3 FV-05-11VK1 50 ☒ 0.3	
W/R FV-05-11VK1 60 ☒ 0.3	

HEAT RECOVERY VENTILATOR	9.32.3.11.
Model: VANEE 65H	
165 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 #:	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: September-20

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: 19869

MICHAEL O'ROURKE

CITY OF HAMILTON
BUILDING DIVISION
Planning & Development Department

REC'D BY	DATE
REF'D NO	DATE
FEB 05 2021	

FEB 05 2021

REC'D BY _____ DATE _____

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

LO#: 87593

Model: MOUNTAINASH 12

Builder: GREENPARK HOMES

Date: 17/09/2020

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1377	8	11016
First	1377	11	15147
Second	1726	9	15534
Third	0	9	0
Fourth	0	9	0
Total:			41,697.0 ft³
Total:			1180.7 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.319
SUMMER NATURAL AIR CHANGE RATE	0.114

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

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

$$0.319 \times 327.98 \times 39^\circ\text{C} \times 1.2 = 4928 \text{ W}$$

$$= 16813 \text{ Btu/h}$$

6.2.6 Sensible Gain due to Air Leakage

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

$$0.114 \times 327.98 \times 7^\circ\text{C} \times 1.2 = 320 \text{ W}$$

$$= 1092 \text{ Btu/h}$$

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)	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	16,813	8,679	0.969
2	0.3		13,548	0.372
3	0.2		13,801	0.244
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

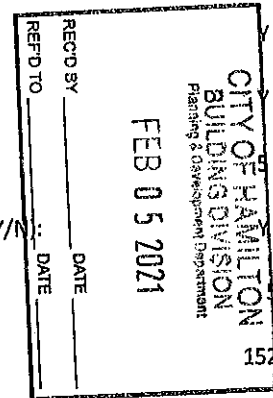
MODEL: MOUNTAINASH 12	LOT 156	BUILDER: GREENPARK HOMES
SFQT: 3103	LO# 87593	SITE: RUSSEL GARDENS PHASE 3

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):	41697.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	Y
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: 51.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	152.0 ft

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

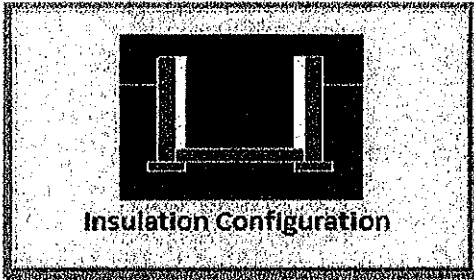
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20 cl	21.12
Below Grade Slab Entire surface > 600 mm below 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	-

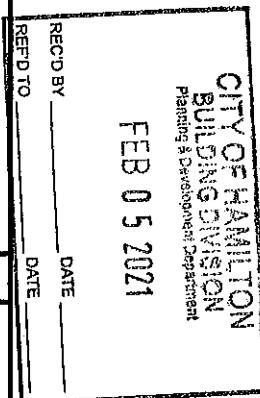
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

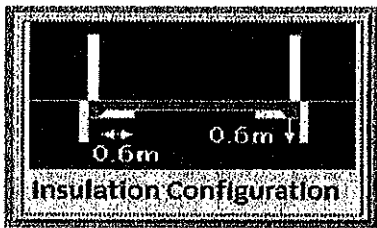
Weather Station Description		
Province:	Ontario	
Region:	Hamilton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.5	 Insulation Configuration
Floor Width (m):	11.3	
Exposed Perimeter (m):	46.3	
Wall Height (m):	2.4	
Depth Below Grade (m):	1.52	
Window Area (m ²):	1.9	
Door Area (m ²):	3.7	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	1460	

TYPE: MOUNTAINASH 12
LO# 87593

LOT 156

Residential Slab on Grade 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		
Length (m):	1.8	
Width (m):	3.7	
Exposed Perimeter (m):	7.3	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):	57	

TYPE: MOUNTAINASH 12
LO# 87593

LOT 156

CITY OF HAMILTON BUILDING DIVISION Planning & Development Department	
FEB 05 2021	
REC'D BY _____	DATE _____
REF'D TO _____	DATE _____

Air Infiltration Residential Load Calculator

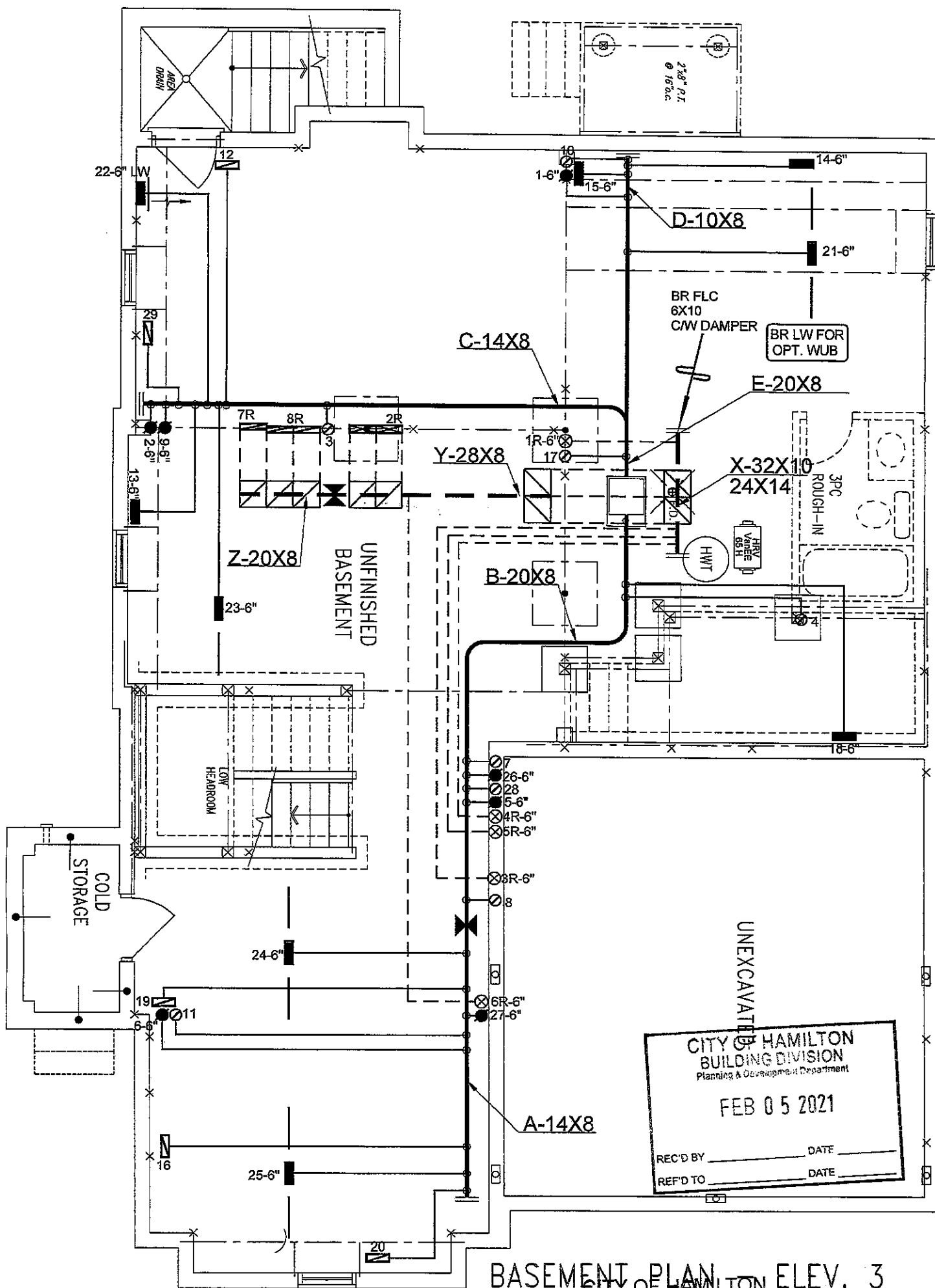
Supplemental tool for CAN/CSA-F280

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):	7.01			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1180.7			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa. 3.57	1573.9 cm ² ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply 37.5	Total Exhaust 37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.319			
Cooling Air Leakage Rate (ACH/H):	0.114			

TYPE: MOUNTAINASH 12
LO# 87593

LOT 156

REC'D BY	DATE
REF'D TO	DATE
FEB 05 2021	
CITY OF HAMILTON BUILDING DIVISION Planning & Development Department	



CITY OF HAMILTON
BUILDING DIVISION
Planning & Development Department
FEB 05 2021
REC'D BY _____ DATE _____
REF'D TO _____ DATE _____

BASEMENT PLAN ELEV. 3
Building Division

Permit No. 21-105920

THESE STAMPED DRAWINGS SHALL BE AVAILABLE ON SITE
THE OWNER AND/OR CONTRACTOR SHALL COMPLY WITH
THE ONTARIO BUILDING CODE AND ALL OTHER APPLICABLE LAW

These drawings and/or specifications have been reviewed by
Ken Smith Feb 22, 2021
FOR CHIEF BUILDING OFFICIAL DATE

LOT 156
WUB
CSA-F280-12
PACKAGE A1

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

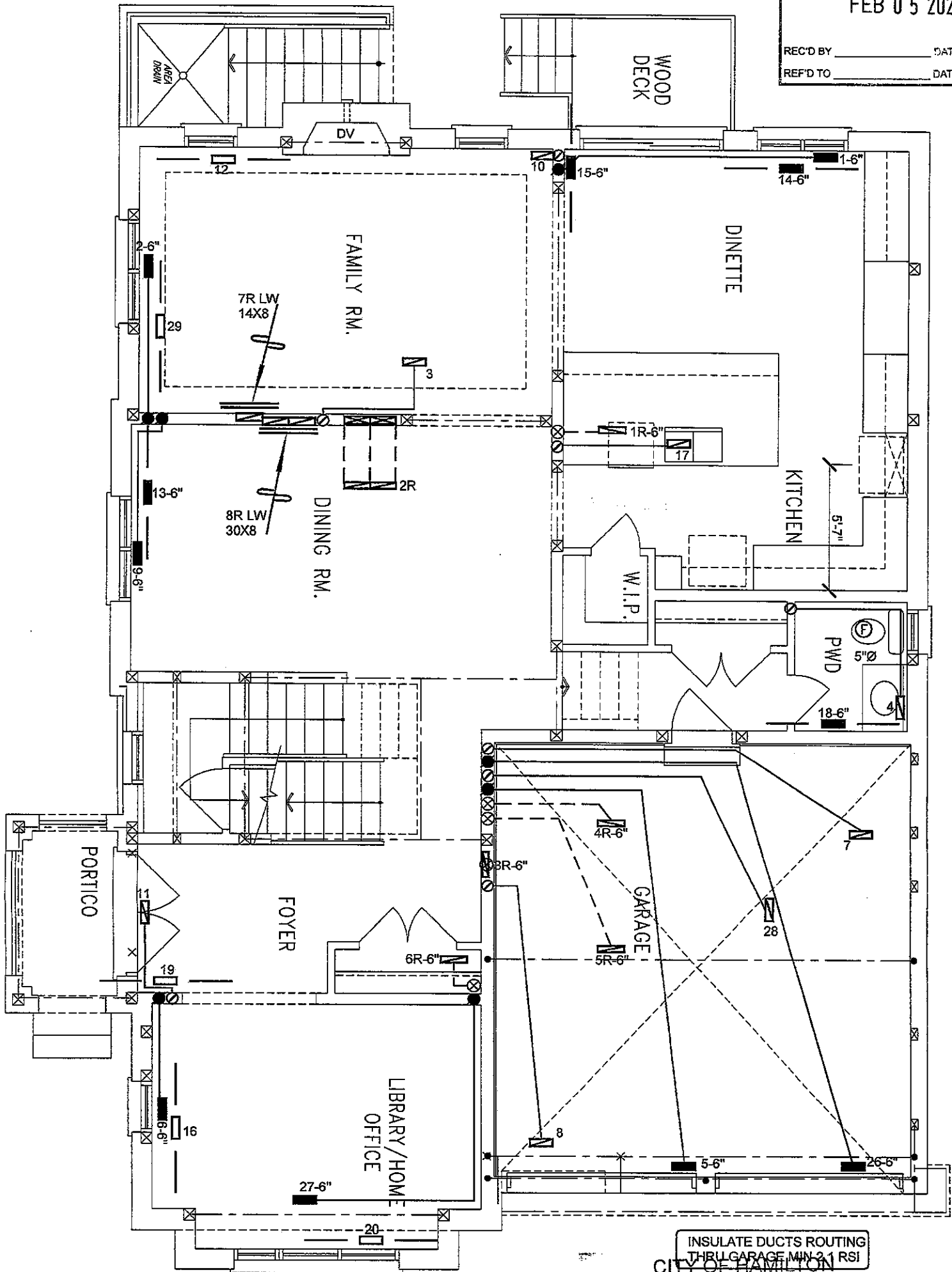
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Client		HVACDESIGNS LTD. 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply 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.	HEAT LOSS 54932 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title	
GREENPARK HOMES			MAKE GOODMAN		3RD FLOOR				BASEMENT HEATING LAYOUT	
Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			MODEL GMEC960804CNA		2ND FLOOR		15	6	4	
LOT 156 MOUNTAINASH 12 3103 sqft			INPUT 80 MBTU/H		1ST FLOOR		9	2	2	
			OUTPUT 76.8 MBTU/H		BASEMENT		5	1	0	Date SEPT/2020
		COOLING 3.5 TONS		ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A		Scale 3/16" = 1'-0"		BCIN# 19669		
		FAN SPEED 1504 cfm @ 0.5" w.c.				LO#		87593		

CITY OF HAMILTON
BUILDING DIVISION
Planning & Development Department

FEB 05 2021

REC'D BY _____ DATE _____
REF'D TO _____ DATE _____



GROUND FLOOR PLAN - ELEV. 3

Permit No. 21-105920

THESE STAMPED DRAWINGS SHALL BE AVAILABLE ON SITE

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These drawings and/or specifications have been reviewed by

Ken Smith Feb 22, 2021

FOR CHIEF BUILDING OFFICIAL

DATE

LOT 156
WUB
CSA-F280-12
PACKAGE A1

I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.3 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.		
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	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

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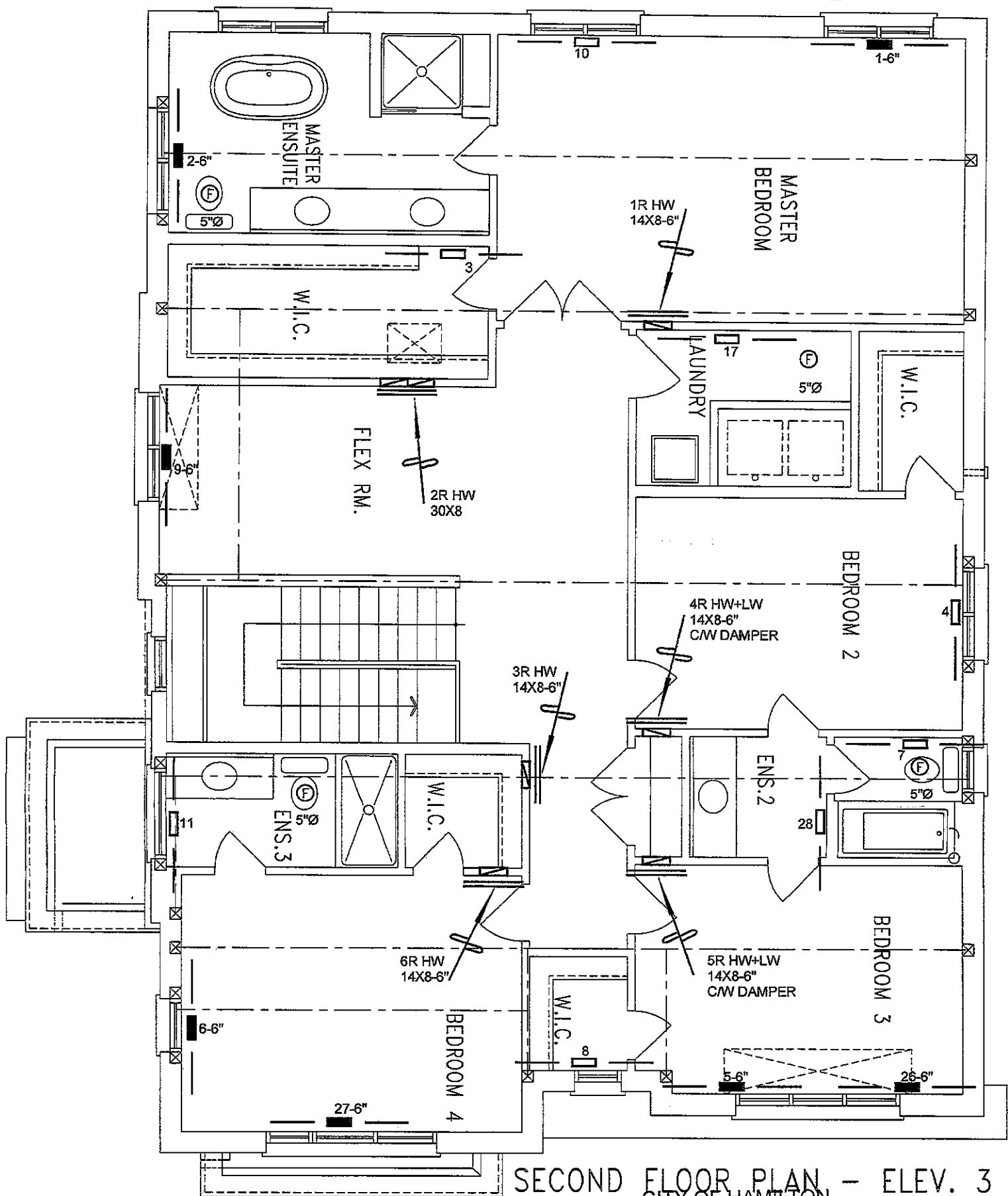
Client
GREENPARK HOMES

Project Name
**RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO**

**LOT 156
MOUNTAINASH 12 3103 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@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	
Date	SEPT/2020
Scale	3/16" = 1'-0"
BCIN# 19669	
LO#	87593



SECOND FLOOR PLAN - ELEV. 3
CITY OF HAMILTON
Building Division

Permit No. 21-105920

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THE OWNER AND/OR CONTRACTOR SHALL COMPLY WITH
THE ONTARIO BUILDING CODE AND ALL OTHER APPLICABLE LAW

These drawings and/or specifications have been reviewed by
Kem Smith Feb 22, 2021
FOR CHIEF BUILDING OFFICIAL DATE

LOT 156
WUB
CSA-F280-12
PACKAGE A1

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

HVAC LEGEND								REVISIONS	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Date
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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 SECOND FLOOR HEATING LAYOUT	
Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			Date SEPT/2020	
LOT 156 MOUNTAINASH 12 3103 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO# 87593	