HVAC DESIGNS LTD.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: RUSSEL GARDENS | LOT 204-3 | DATE: Dec-17 | WINTER NATURAL AIR CHANGE RATE 0.482 | HEAT LOSS ΔT °F. 71 | CSA-F280-12
BUILDER: GREENPARK HOMES | TYPE: HIGHGROVE 1 WOB | GFA: 1594 | LO# 77163 | SUMMER NATURAL AIR CHANGE RATE 0.182 | HEAT GAIN ΔT °F. 16 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS			WIC			BED-2			BED-3				BATH								
EXP. WALL			18			15			0			10			13				0								
CLG. HT.			9			9			9			9			10				9								
	FACTORS																										
GRS.WALL AREA	LOSS	GAIN	162			135			0			90			124				0								
GLAZING			LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN		LOSS		GAIN						
NORTH	19.8	16.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0						
EAST	19.8	42.4	0	0	0	0	0	0	0	0	0	23	455	975	39	771	1653		0	0	0						
SOUTH	19.8	25.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0						
WEST	19.8	42.4	28	554	1187	14	277	593	0	0	0	0	0	0	0	0	0		0	0	0						
SKYLT.	34.6	103.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0						
DOORS	23.5	5.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0						
NET EXPOSED WALL	4.1	0.9	134	556	124	121	502	112	0	0	0	67	278	62	85	350	78		0	0	0						
NET EXPOSED BSMT WALL ABOVE GR	3.3	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0						
EXPOSED CLG	1.2	0.6	234	279	149	90	107	57	60	72	38	145	173	93	116	138	74		72	86	46						
NO ATTIC EXPOSED CLG	2.6	1.4	0	0	0	0	0	0	0	0	0	0	0	0	27	69	37		0	0	0						
EXPOSED FLOOR	2.4	0.5	52	123	28	0	0	0	50	118	27	110	261	58	0	0	0		0	0	0						
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0				0							
SLAB ON GRADE HEAT LOSS				0			0			0			0			0				0							
SUBTOTAL HT LOSS				1511			886			190			1166			1328				86							
SUB TOTAL HT GAIN					1488			763			65			1188			1843				46						
LEVEL FACTOR / MULTIPLIER			0.20	0.52		0.20	0.52		0.20	0.52		0.20	0.52		0.20	0.52			0.20	0.52							
AIR CHANGE HEAT LOSS				785			460			99			606			690				45							
AIR CHANGE HEAT GAIN					227			116			10			181			281				7						
DUCT LOSS				230			0			29			177			0				0							
DUCT GAIN					262			0			7			204			0				0						
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240		0		0						
HEAT GAIN APPLIANCES/LIGHTS					429			0			0			429			429				0						
TOTAL HT LOSS BTU/H				2526			1346			318			1949			2018				130							
TOTAL HT GAIN x 1.3 BTU/H					3753			1144			107			2915			3631				69						

ROOM USE			LV/DN				KT/BR				PWD			FOY			MUD				WOB			BAS		
EXP. WALL			37				34				8			30			10				54			101		
CLG. HT.			10				10				10			10			10				9			9		
	FACTORS																									
GRS.WALL AREA	LOSS	GAIN	370				340				80			300			100				486			606		
GLAZING			LOSS		GAIN		LOSS		GAIN		LOSS		GAIN	LOSS		GAIN	LOSS		GAIN		LOSS		GAIN	LOSS		GAIN
NORTH	19.8	16.8	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0		30	593	504	8	158	135
EAST	19.8	42.4	0	0	0		0	0	0		0	0	0	18	356	763	0	0	0		0	0	0	0	0	0
SOUTH	19.8	25.7	8	158	206		0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
WEST	19.8	42.4	45	890	1908		0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
SKYLT.	34.6	103.0	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
DOORS	23.5	5.2	0	0	0		20	469	105		0	0	0	20	469	105	20	469	105		40	938	210	20	469	105
NET EXPOSED WALL	4.1	0.9	317	1314	294		320	1327	297		80	332	74	262	1086	243	80	332	74		416	1725	386	0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.3	0.7	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	303	1013	227
EXPOSED CLG	1.2	0.6	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.6	1.4	143	365	195		0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
EXPOSED FLOOR	2.4	0.5	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						2287		
SLAB ON GRADE HEAT LOSS				0				0				0			0			0				520				
SUBTOTAL HT LOSS				2727				1796				332			1911			801				3776			3927		
SUB TOTAL HT GAIN					2603				402				74			1111			179				1100			466
LEVEL FACTOR / MULTIPLIER			0.30	0.53			0.30	0.53			0.30	0.53		0.30	0.53		0.30	0.53						0.50	0.87	
AIR CHANGE HEAT LOSS				1451				955				176			1017			426							6709	
AIR CHANGE HEAT GAIN					397				61				11			170			27							239
DUCT LOSS				0				0				0			0			0							0	
DUCT GAIN					0				0				0			0			0							0
HEAT GAIN PEOPLE	240		0		0		0		0		0		0	0		0	0		0		0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					429				429				0			0			429				0			429
TOTAL HT LOSS BTU/H				4178				2751				508			2928			1227				4296			10636	
TOTAL HT GAIN x 1.3 BTU/H					4458				1160				111			1665			826				1430			1474

TOTAL HEAT GAIN BTU/H: 23335 | TONS: 1.94 | LOSS DUE TO VENTILATION LOAD BTU/H: 2650 | STRUCTURAL HEAT LOSS: 34810 | TOTAL COMBINED HEAT LOSS BTU/H: 37459

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

Michael O'Rourke

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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SITE NAME: RUSSEL GARDENS
BUILDER: GREENPARK HOMES

LOT 204-3
TYPE: HIGHGROVE 1 WOB

DATE: Dec-17

GFA: 1594 LO# 77163

HEATING CFM	890	COOLING CFM	890
TOTAL HEAT LOSS	34,810	TOTAL HEAT GAIN	22,742
AIR FLOW RATE CFM	25.57	AIR FLOW RATE CFM	39.13

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
GMEC960402BNA 40

FAN SPEED	
LOW	
MEDLOW	
MEDIUM	
MEDIUM HIGH	
HIGH	890

AFUE = 96 %
INPUT (BTU/H) = 40,000
OUTPUT (BTU/H) = 38,400

DESIGN CFM = 890
CFM @ .6 " E.S.P.

TEMPERATURE RISE 40 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	9	7	4
R/A	0	0	3	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	12	13	14	15	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-2	BATH	BED-3	MBR	LV/DN	LV/DN	KT/BR	KT/BR	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.26	1.35	0.32	0.97	1.01	0.97	0.13	1.01	1.26	2.09	2.09	1.38	1.38	0.51	2.93	1.23	3.73	3.73	3.73	3.73
CFM PER RUN HEAT	32	34	8	25	26	25	3	26	32	53	53	35	35	13	75	31	95	95	95	95
RM GAIN MBH.	1.88	1.14	0.11	1.46	1.82	1.46	0.07	1.82	1.88	2.23	2.23	0.58	0.58	0.11	1.66	0.83	0.73	0.73	0.73	0.73
CFM PER RUN COOLING	73	45	4	57	71	57	3	71	73	87	87	23	23	4	65	32	28	28	28	28
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	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.	37	24	21	24	46	34	35	42	37	27	36	16	14	23	35	18	27	13	29	15
EQUIVALENT LENGTH	190	180	170	150	130	160	130	120	220	120	120	150	130	120	140	190	120	170	110	170
TOTAL EFFECTIVE LENGTH	227	204	191	174	176	194	165	162	257	147	156	166	144	143	175	208	147	183	139	185
ADJUSTED PRESSURE	0.08	0.08	0.09	0.1	0.1	0.09	0.1	0.11	0.07	0.11	0.1	0.1	0.12	0.12	0.1	0.08	0.11	0.09	0.12	0.09
ROUND DUCT SIZE	5	4	4	5	5	5	4	5	5	5	5	4	4	4	5	4	5	6	5	6
HEATING VELOCITY (ft/min)	235	390	92	184	191	184	34	191	235	389	389	402	402	149	551	356	698	484	698	484
COOLING VELOCITY (ft/min)	536	516	46	419	521	419	34	521	536	639	639	264	264	46	477	367	206	143	206	143
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10
TRUNK	A	C	C	C	B	C	C	B	A	A	A	A	A	B	B	A	A	A	B	A

RUN #	
ROOM NAME	
RM LOSS MBH.	
CFM PER RUN HEAT	
RM GAIN MBH.	
CFM PER RUN COOLING	
ADJUSTED PRESSURE	
ACTUAL DUCT LGH.	
EQUIVALENT LENGTH	
TOTAL EFFECTIVE LENGTH	
ADJUSTED PRESSURE	
ROUND DUCT SIZE	
HEATING VELOCITY (ft/min)	
COOLING VELOCITY (ft/min)	
OUTLET GRILL SIZE	
TRUNK	

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	556	0.07	11.6	16	x	8	626
TRUNK B	235	0.10	7.7	8	x	8	529
TRUNK C	330	0.08	9.3	10	x	8	594
TRUNK D	0	0.00	0	0	x	8	0
TRUNK E	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0

	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 TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK O	0	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	890	0.06	14.4	24	x	8	668
TRUNK Y	365	0.06	10.3	12	x	8	548
TRUNK Z	0	0.06	0	0	x	8	0
DROP	890	0.06	14.4	24	x	10	534

RETURN AIR #	1	2	3	4	5											BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	110	95	135	250	135	0	0	0	0	0	0	0	0	0	0	165
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
ACTUAL DUCT LGH.	35	36	45	31	26	1	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	135	185	220	180	215	0	0	0	0	0	0	0	0	0	0	175
TOTAL EFFECTIVE LH	170	221	265	211	241	1	1	1	1	1	1	1	1	1	1	189
ADJUSTED PRESSURE	0.09	0.07	0.06	0.07	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.08
ROUND DUCT SIZE	6	6	7.1	8.6	7.1	0	0	0	0	0	0	0	0	0	0	7.1
INLET GRILL SIZE	8	8	8	8	8	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
INLET GRILL SIZE	14	14	14	30	14	0	0	0	0	0	0	0	0	0	0	14

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INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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TYPE: HIGHGROVE 1 WOB LO # 77163
SITE NAME: RUSSEL GARDENS LOT 204-3

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES — 9.32.3.1(1)

- a) [✓] Direct vent (sealed combustion) only
- b) [ ] Positive venting induced draft (except fireplaces)
- c) [ ] Natural draft, B-vent or induced draft gas fireplace
- d) [ ] Solid Fuel (including fireplaces)
- e) [ ] No Combustion Appliances

HEATING SYSTEM

[✓] Forced Air [ ] Non Forced Air

[ ] Electric Space Heat

HOUSE TYPE — 9.32.1(2)

- [✓] I Type a) or b) appliance only, no solid fuel
- [ ] II Type I except with solid fuel (including fireplaces)
- [ ] III Any Type c) appliance
- [ ] IV Type I, or II with electric space heat
- [ ] Other: Type I, II or IV no forced air

SYSTEM DESIGN OPTIONS — O.N.H.W.P.

- [ ] 1 Exhaust only/Forced Air System
- [ ] 2 HRV with Ducting/Forced Air System
- [✓] 3 HRV Simplified/connected to forced air system
- [ ] 4 HRV with Ducting/non forced air system
- [ ] Part 6 Design

TOTAL VENTILATION CAPACITY — 9.32.3.3(1)

Basement + Master Bedroom	2	@ 21.2 cfm	42.4	cfm
Other Bedrooms	2	@ 10.6 cfm	21.2	cfm
Kitchen & Bathrooms	4	@ 10.6 cfm	42.4	cfm
Other Rooms	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.		TOTAL	169.6	cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED — 9.32.3.4.(1)

1	Bedroom	31.8	cfm
2	Bedroom	47.7	cfm
3	Bedroom	63.6	cfm
4	Bedroom	79.5	cfm
5	Bedroom	95.4	cfm
	TOTAL	63.6	cfm

SUPPLEMENTAL VENTILATION CAPACITY — 9.32.3.5.

Total Ventilation Capacity	169.6	cfm
Less Principal Ventil. Capacity	139	cfm
Required Supplemental Capacity	30.6	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 60H-V+ Location: BSMT

139.0 cfm 3.0 sones [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
139.0 CFM	X	71 F	X	1.08	X	0.25

SUPPLEMENTAL FANS

Location	Model	cfm	HVI	Sones
	NUTONE			
ENS	QTXEN050C	50	✓	0.3
BATH	QTXEN050C	50	✓	0.3
PWD	QTXEN050C	50	✓	0.3

HEAT RECOVERY VENTILATOR — 9.32.3.11.

Model: VANEE 60H-V+

139 cfm high 50 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: Michael O'Rourke

HRAI # 001820

Date: December-17

I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

INDIVIDUAL BCIN: 19669 Michael O'Rourke MICHAEL O'ROURKE

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	HIGHGROVE 1 WOB		LOT 204-3	**BUILDER:**	GREENPARK HOMES
SFQT:	1594	**LO#**	77163	**SITE:**	RUSSEL GARDENS

DESIGN ASSUMPTIONS

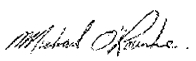
HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	1	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	72

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	4.55	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	22046.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 48.0 ft	WIDTH: 21.0 ft	EXPOSED PERIMETER:	101.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	45.0 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	-

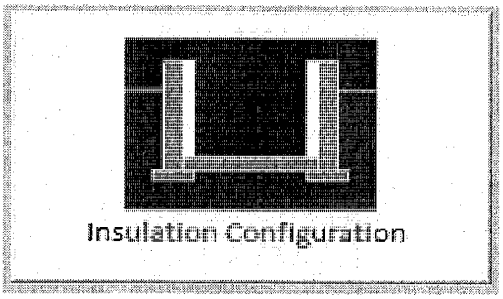
INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE



HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

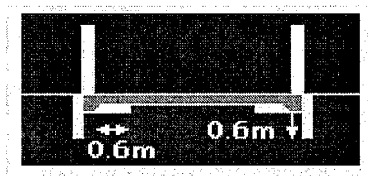
Weather Station Description		
Province:	Ontario	
Region:	Hamilton	
Site Description		
Soil Conductivity:	Normal conductivity: dry dand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	**6.7**	 Insulation Configuration
Floor Width (m):	**6.4**	
Exposed Perimeter (m):	**30.8**	
Wall Height (m):	**2.7**	
Depth Below Grade (m):	**1.55**	
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):		**670**

TYPE: HIGHGROVE 1 WOB LOT 204-3
LO# 77163

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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 dand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Length (m):	**3.7**	
Width (m):	**6.4**	
Exposed Perimeter (m):	**13.7**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	

Insulation Configuration

Results	
Heating Load (Watts):	**152**

TYPE: HIGHGROVE 1 WOB LOT 204-3
LO# 77163

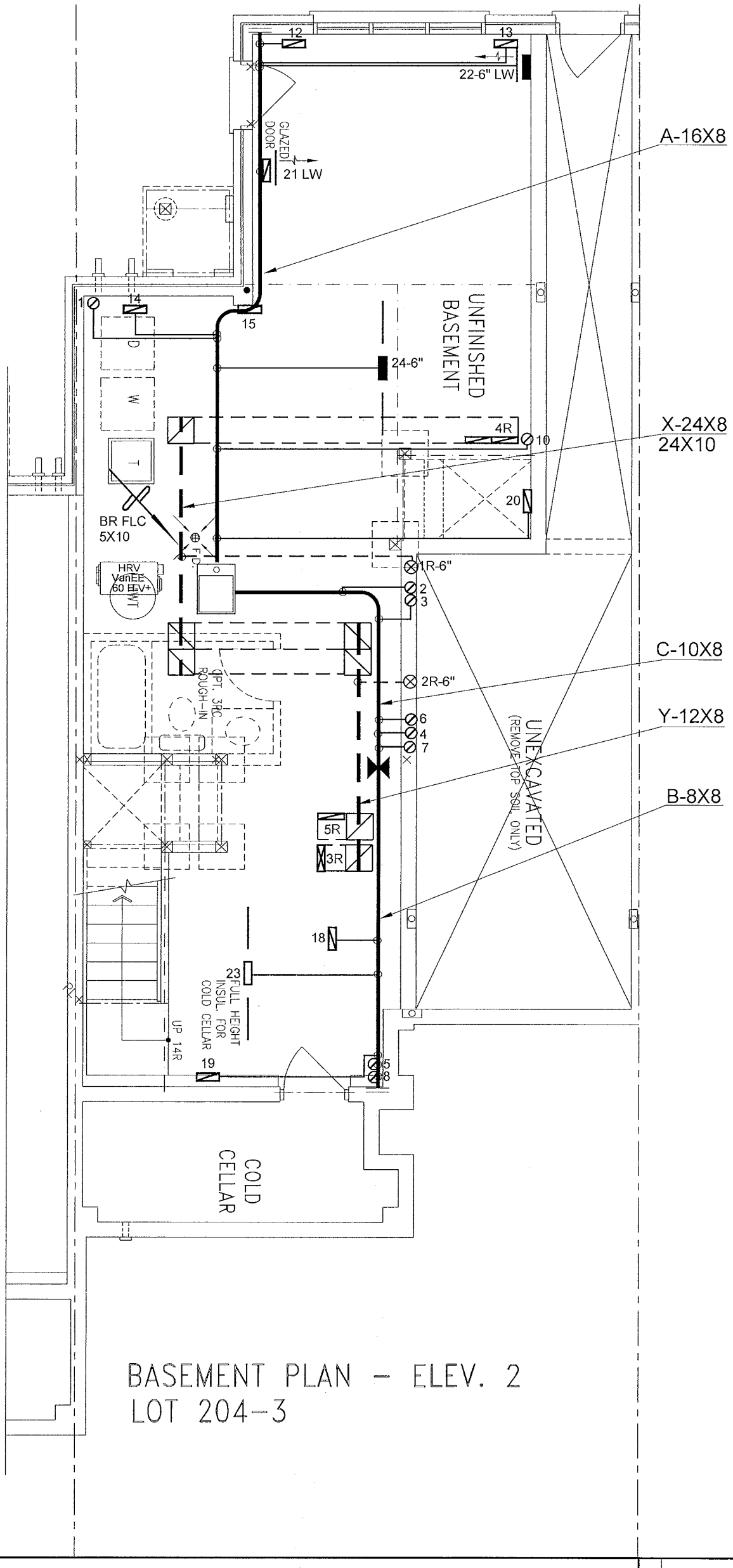
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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):	8.53	
Building Configuration		
Type:	Semi	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m^3):	624.3	
Air Leakage/Ventilation		
Air Tightness Type:	Average (1946-1960) (4.55 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1060.6 cm^2
	4.55	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust
	65.6	65.6
Flue Size		
Flue #:	#1 #2 #3 #4	
Diameter (mm):	0 0 0 0	
Natural Infiltration Rates		
Heating Air Leakage Rate (ACH/H):	**0.482**	
Cooling Air Leakage Rate (ACH/H):	**0.182**	

TYPE: HIGHGROVE 1 WOB LOT 204-3
LO# 77163



BASEMENT PLAN - ELEV. 2
LOT 204-3

WOB
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, BCIN# 19669
HVAC DESIGNS LTD.

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.		

REVISIONS

Client
GREENPARK HOMES

Project Name
RUSSEL GARDENS
HAMILTON, ONTARIO
WOB
LOT 204-3
HIGHGROVE 1 1594 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.

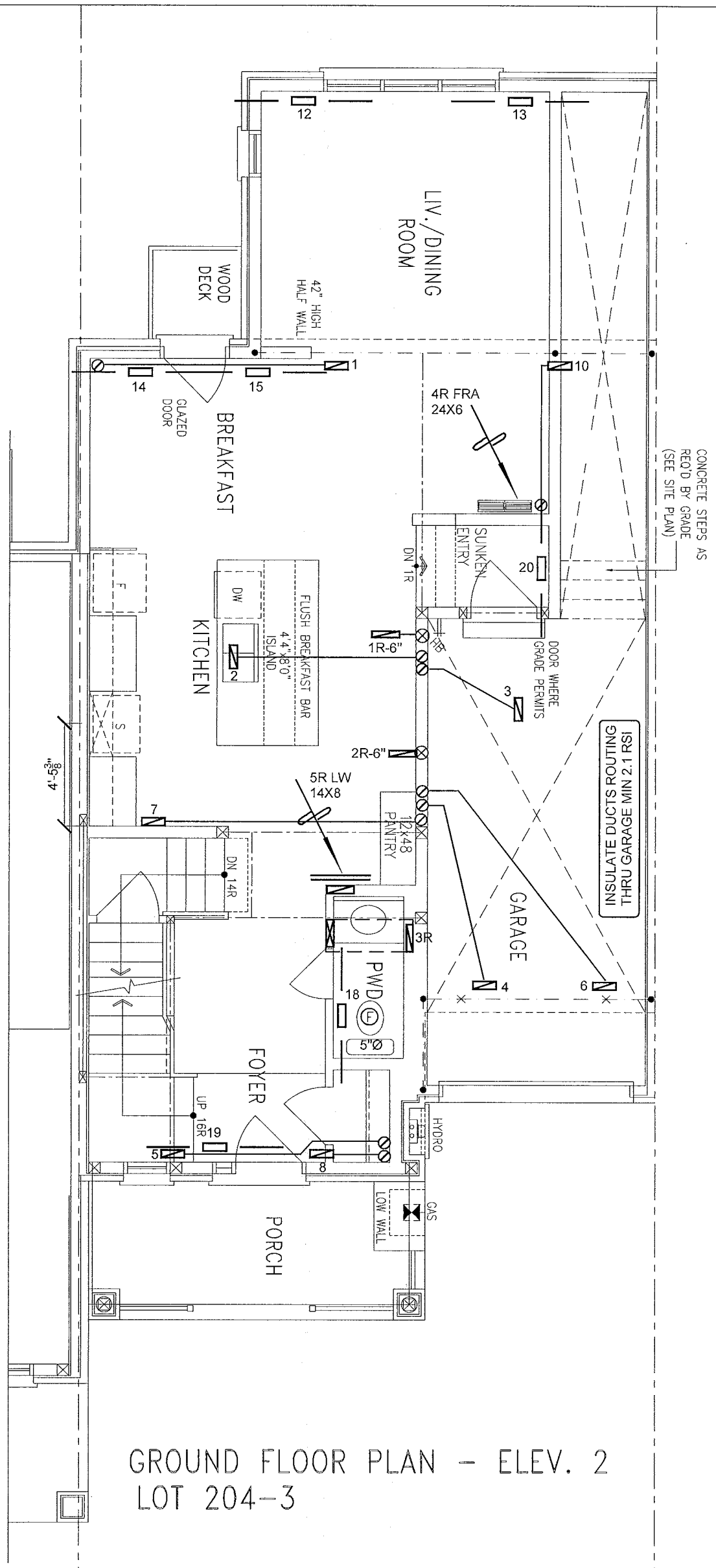
HEAT LOSS 37459 BTU/H	
UNIT DATA	
MAKE	GOODMAN
MODEL	GMEC960402BNA-40
INPUT	40 MBTU/H
OUTPUT	38.4 MBTU/H
COOLING	2.0 TONS
FAN SPEED	890 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	9	3	2
1ST FLOOR	7	2	2
BASEMENT	4	1	0

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

Sheet Title
BASEMENT HEATING LAYOUT

Date DEC/2017
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 77163



GROUND FLOOR PLAN - ELEV. 2
LOT 204-3

WOB

CSA-F280-12

PACKAGE A1

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Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD

HVAC LEGEND

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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
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER

No.	Description	Date
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REVISIONS

Client
GREENPARK HOMES

Project Name
RUSSEL GARDENS
HAMILTON, ONTARIO
WOB
LOT 204-3
HIGHGROVE 1 1594 sqft

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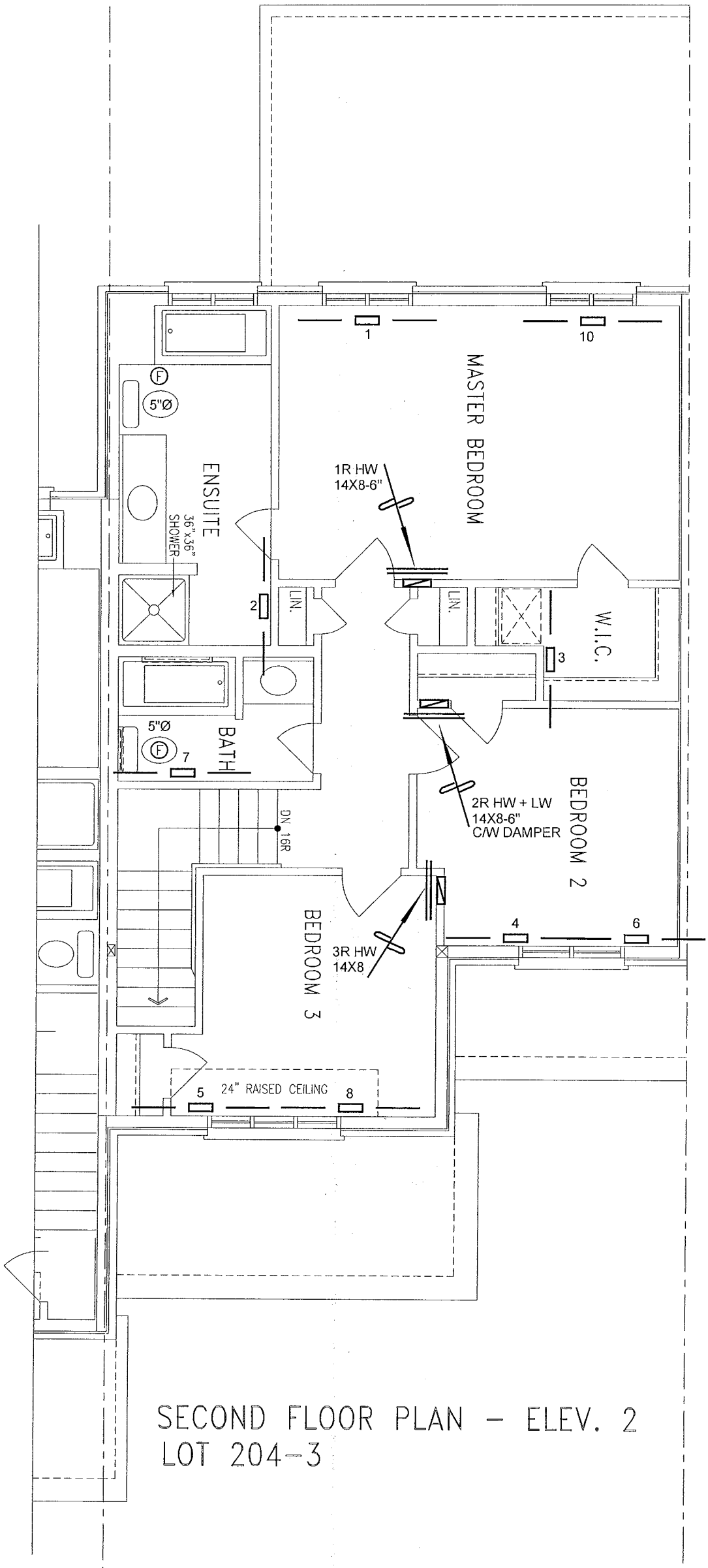
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date DEC/2017
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 77163



SECOND FLOOR PLAN – ELEV. 2
LOT 204-3

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.

WOB
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.		
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1.		

REVISIONS

Client
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HAMILTON, ONTARIO
WOB
LOT 204-3
HIGHGROVE 1 1594 sqft

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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date DEC/2017
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 77163