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 204-1 | DATE: Dec-17 | WINTER NATURAL AIR CHANGE RATE 0.378 | HEAT LOSS ΔT °F. 71 | CSA-F280-12
BUILDER: GREENPARK HOMES | TYPE: HIGHGROVE 7E WOB | GFA: 2484 | LO# 77165 | SUMMER NATURAL AIR CHANGE RATE 0.131 | HEAT GAIN ΔT °F. 13 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			BATH			WIC-3				ENS-2				
EXP. WALL			18			25			28			11			28			15			6			10				0				
CLG. HT.			9			9			9			9			9			9			9			9				9				
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	162			225			252			99			252			135			54			90				0				
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		
NORTH	19.8	15.3	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		
EAST	19.8	39.4	0	0	0	0	0	0	0	0	0	25	494	985	35	692	1378	0	0	0	0	0	0	0	0	0		0	0	0		
SOUTH	19.8	23.7	0	0	0	0	0	0	21	415	497	0	0	0	0	0	0	17	336	403	7	138	166	0	0	0		0	0	0		
WEST	19.8	39.4	35	692	1378	17	336	670	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		
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	0	0	0		0	0	0		
NET EXPOSED WALL	4.1	0.8	127	526	95	208	862	156	231	958	174	74	307	56	217	900	163	118	489	89	47	195	35	90	373	68		0	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	0	0		0	0	0		
EXPOSED CLG	1.2	0.6	256	305	150	120	143	71	96	114	56	132	157	78	155	185	91	228	272	134	96	114	56	36	43	21		108	129	63		
NO ATTIC EXPOSED CLG	2.6	1.3	0	0	0	0	0	0	0	0	0	0	0	0	27	69	34	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	132	313	57	0	0	0	0	0	0	0	0	0	0	0	0		108	256	46		
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			1524			1341			1487			1271			1845			1097			448			416				385				
SUB TOTAL HT GAIN					1624			896			727			1174			1667			625			258			89			110		
LEVEL FACTOR / MULTIPLIER			0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32			0.20	0.32			
AIR CHANGE HEAT LOSS			485			427			473			405			587			349			143			132				122				
AIR CHANGE HEAT GAIN					154			85			69			111			158			59			24			8			10		
DUCT LOSS			0			0			0			168			0			0			0			0				51				
DUCT GAIN					0			0			0			218			0			0			0			0			12		
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0	0		0		0		0		
HEAT GAIN APPLIANCES/LIGHTS					658			0			0			658			658			658			0			0			0		
TOTAL HT LOSS BTU/H			2009			1768			1961			1843			2433			1446			590			548				558				
TOTAL HT GAIN x 1.3 BTU/H					3791			1276			1035			3123			3539			2057			367			126			172		

ROOM USE				LV/DN			KT/FM				LAUN			PWD			FOY					WOB			BAS		
EXP. WALL				55			72				6			13			21					60			112		
CLG. HT.				10			10				9			10			10					9			9		
	FACTORS																										
GRS.WALL AREA	LOSS	GAIN		550			720				54			130			210					540			672		
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN				LOSS	GAIN		LOSS	GAIN	
NORTH	19.8	15.3		0	0	0	0	0	0		0	0	0	0	0	0	0	0	0			67	1324	1023	11	217	168
EAST	19.8	39.4		0	0	0	0	0	0		0	0	0	11	217	433	0	0	0			0	0	0	0	0	0
SOUTH	19.8	23.7		43	850	1018	0	0	0		0	0	0	0	0	0	0	0	0			0	0	0	0	0	0
WEST	19.8	39.4		0	0	0	98	1937	3859		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		20	469	85	0	0	0		0	0	0	0	0	0	45	1055	191			0	0	0	20	469	85
NET EXPOSED WALL	4.1	0.8		487	2019	366	622	2579	468		54	224	41	119	493	89	165	684	124			473	1961	356	0	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	336	1123	204
EXPOSED CLG	1.2	0.6		0	0	0	0	0	0		80	95	47	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	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
BASEMENT/CRAWL HEAT LOSS					0			0				0			0			0							2447		
SLAB ON GRADE HEAT LOSS					0			0				0			0			0					800				
SUBTOTAL HT LOSS					3338			4516				319			711			1740					4085			4257		
SUB TOTAL HT GAIN						1469			4327				88			523			315					1378			457
LEVEL FACTOR / MULTIPLIER				0.30	0.47		0.30	0.47			0.20	0.32		0.30	0.47		0.30	0.47							0.50	0.97	
AIR CHANGE HEAT LOSS					1568			2121				102			334			817								8065	
AIR CHANGE HEAT GAIN						139			411				8			50			30								174
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						658			658				658			0			0					0			0
TOTAL HT LOSS BTU/H					4906			6636				421			1045			2556					4885			12322	
TOTAL HT GAIN x 1.3 BTU/H						2947			7014				980			744			449					1792			820

TOTAL HEAT GAIN BTU/H: 30712 TONS: 2.56 LOSS DUE TO VENTILATION LOAD BTU/H: 2650 STRUCTURAL HEAT LOSS: 45927 TOTAL COMBINED HEAT LOSS BTU/H: 48576

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 — LOT 204-1
BUILDER: GREENPARK HOMES — TYPE: HIGHGROVE 7E WOB — DATE: Dec-17 — GFA: 2484 — LO# 77165

HEATING CFM	1131	COOLING CFM	1131	furnace pressure	0.6			#GOODMAN		AFUE =	96 %	
TOTAL HEAT LOSS	45,927	TOTAL HEAT GAIN	30,232	furnace filter	0.05			GMEC960603BNA	60	INPUT (BTU/H) =	60,000	
AIR FLOW RATE CFM	24.63	AIR FLOW RATE CFM	37.41	a/c coil pressure	0.2			FAN SPEED		OUTPUT (BTU/H) =	57,600	
				available pressure for s/a & r/a	0.35			LOW				
								MEDLOW		DESIGN CFM =	1131	
				plenum pressure s/a	0.18	r/a pressure	0.17	MEDIUM		CFM @ .6" E.S.P.		
				max s/a dif press. loss	0.02	r/a grille press. Loss	0.02	MEDIUM HIGH				
				min adjusted pressure s/a	0.16	adjusted pressure r/a	0.15	HIGH	1131	TEMPERATURE RISE	47	°F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	13	7	5
R/A	0	0	4	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	BATH	WIC-3	BED-2	MBR	ENS-2	LV/DN	LV/DN	KT/FM	KT/FM	KT/FM	LAUN	PWD	FOY	BED-3	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.00	1.77	1.96	0.92	1.22	1.45	0.59	0.55	0.92	1.00	0.56	2.45	2.45	2.21	2.21	2.21	0.42	1.04	2.56	1.22	3.44	3.44	3.44	3.44
CFM PER RUN HEAT	25	44	48	23	30	36	15	14	23	25	14	60	60	54	54	54	10	26	63	30	85	85	85	85
RM GAIN MBH.	1.90	1.28	1.04	1.56	1.77	2.06	0.37	0.13	1.56	1.90	0.17	1.47	1.47	2.34	2.34	2.34	0.98	0.74	0.45	1.77	0.52	0.52	0.52	0.52
CFM PER RUN COOLING	71	48	39	58	66	77	14	5	58	71	6	55	55	87	87	87	37	28	17	66	20	20	20	20
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	51	33	54	61	61	46	55	56	66	41	64	37	41	34	22	16	39	49	47	66	44	33	26	28
EQUIVALENT LENGTH	180	160	160	180	150	140	150	220	190	160	200	110	90	120	80	100	170	130	100	180	110	160	100	120
TOTAL EFFECTIVE LENGTH	231	193	214	241	211	186	205	276	256	201	264	147	131	154	102	116	209	179	147	246	154	193	126	148
ADJUSTED PRESSURE	0.07	0.09	0.08	0.07	0.08	0.09	0.08	0.06	0.07	0.09	0.07	0.12	0.13	0.11	0.16	0.14	0.08	0.1	0.12	0.07	0.11	0.08	0.13	0.11
ROUND DUCT SIZE	5	4	4	5	5	5	4	4	5	5	4	4	5	5	5	5	4	4	4	5	5	6	5	5
HEATING VELOCITY (ft/min)	184	505	551	169	220	264	172	161	169	184	161	688	441	396	396	396	115	298	723	220	624	433	624	624
COOLING VELOCITY (ft/min)	521	551	447	426	485	565	161	57	426	521	69	631	404	639	639	639	424	321	195	485	147	102	147	147
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10
TRUNK	C	D	C	A	A	C	B	A	A	C	A	B	B	C	D	D	D	A	A	A	C	C	D	B

RUN #	25
ROOM NAME	BAS
RM LOSS MBH.	3.44
CFM PER RUN HEAT	85
RM GAIN MBH.	0.52
CFM PER RUN COOLING	20
ADJUSTED PRESSURE	0.16
ACTUAL DUCT LGH.	45
EQUIVALENT LENGTH	140
TOTAL EFFECTIVE LENGTH	185
ADJUSTED PRESSURE	0.09
ROUND DUCT SIZE	5
HEATING VELOCITY (ft/min)	624
COOLING VELOCITY (ft/min)	147
OUTLET GRILL SIZE	3X10
TRUNK	A

SUPPLY 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 A	308	0.06	9.7	12	x	8	462	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	528	0.06	11.9	16	x	8	594	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	358	0.07	9.9	12	x	8	537	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	1131	0.06	15.8	28	x	8	727	TRUNK J	0	0.00	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 F	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	0.05	0	0	x	8	0
TRUNK P	0	0.05	0	0	x	8	0
TRUNK Q	0	0.05	0	0	x	8	0
TRUNK R	0	0.05	0	0	x	8	0
TRUNK S	0	0.05	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	1131	0.05	16.5	32	x	8	636
TRUNK Y	0	0.05	0	0	x	8	0
TRUNK Z	0	0.05	0	0	x	8	0
DROP	1131	0.05	16.5	24	x	10	679

RETURN AIR #	1	2	3	4	5	6										BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	120	120	120	115	155	300	0	0	0	0	0	0	0	0	0	201
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.	61	62	83	69	30	35	1	1	1	1	1	1	1	1	1	19
EQUIVALENT LENGTH	195	155	175	240	215	255	0	0	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	256	217	258	309	245	290	1	1	1	1	1	1	1	1	1	164
ADJUSTED PRESSURE	0.06	0.07	0.06	0.05	0.06	0.05	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6.8	6.6	6.8	7	7.5	10.1	0	0	0	0	0	0	0	0	0	7.5
INLET GRILL SIZE	8	8	8	8	8	8	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	14	14	30	0	0	0	0	0	0	0	0	0	14

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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TYPE: HIGHGROVE 7E WOB LO # 77165
SITE NAME: RUSSEL GARDENS LOT 204-1

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	4	@ 10.6 cfm	42.4	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	79.5	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

NUTONE

Location	Model	cfm	HVI	Sones
ENS	QTXEN050C	50	✓	0.3
BATH	QTXEN050C	50	✓	0.3
ENS-2	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 7E WOB		LOT 204-1	**BUILDER:**	GREENPARK HOMES
SFQT:	2484	**LO#**	77165	**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)	75

BUILDING DATA

ATTACHMENT:	ATTACHED	# 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 (ft^3):	33776.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
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: 36.0 ft	EXPOSED PERIMETER:	112.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	56.0 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	-

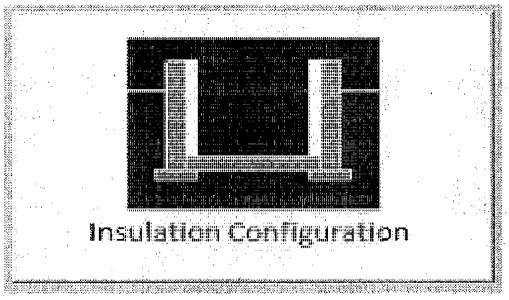
INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

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):	**6.1**	 Insulation Configuration
Floor Width (m):	**11.0**	
Exposed Perimeter (m):	**34.1**	
Wall Height (m):	**2.7**	
Depth Below Grade (m):	**1.59**	
Window Area (m^2):	**1.0**	
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):		**717**

TYPE: HIGHGROVE 7E WOB LOT 204-1
LO# 77165

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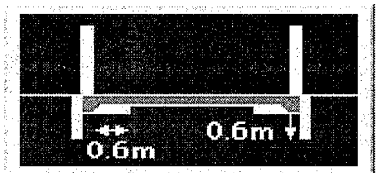
Residential Foundation Thermal Load Calculator

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):	3.0	 Insulation Configuration
Width (m):	11.0	
Exposed Perimeter (m):	17.1	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):	**234**	

TYPE: HIGHGROVE 7E WOB LOT 204-1
LO# 77165

HVAC Designs Ltd.
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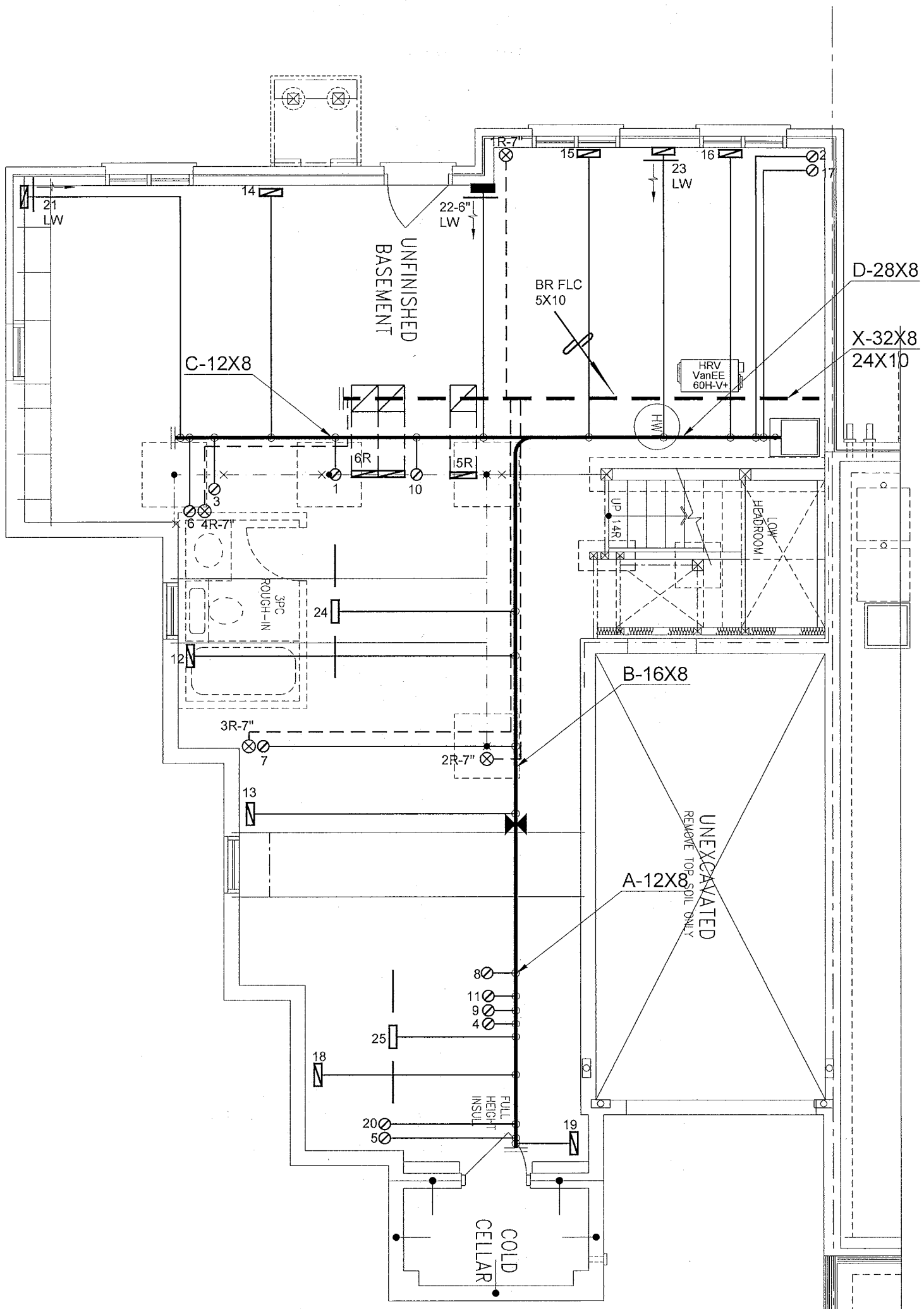
Ajax ON, L1S 2E2
905-619-2300

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):	956.4				
Air Leakage/Ventilation					
Air Tightness Type:	Present (1961-) (3.57 ACH)				
Custom BDT Data:	ELA @ 10 Pa.				1275.0 cm^2
	3.57				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):	**0.378**				
Cooling Air Leakage Rate (ACH/H):	**0.131**				

TYPE: HIGHGROVE 7E WOB LOT 204-1
LO# 77165



BASEMENT PLAN EL. 2
LOT 204-1

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.

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.		
2.		
1.		

REVISIONS

Client
GREENPARK HOMES

Project Name
RUSSEL GARDENS
HAMILTON, ONTARIO
WOB
LOT 204-1
HIGHGROVE 7E 2484 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.

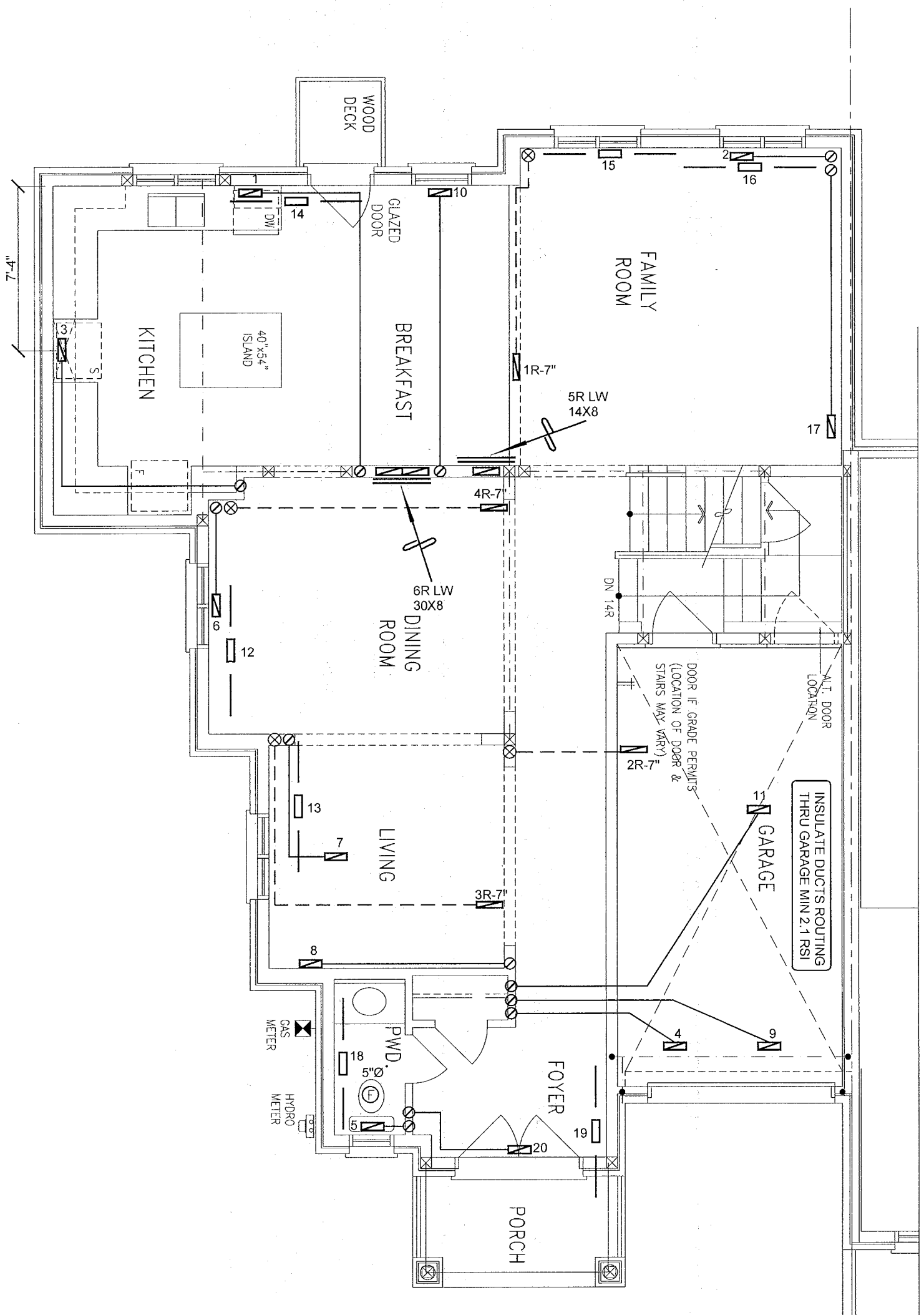
HEAT LOSS 48576 BTU/H	
UNIT DATA	
MAKE	GOODMAN
MODEL	GMEC960603BNA
INPUT	60 MBTU/H
OUTPUT	57.6 MBTU/H
COOLING	2.5 TONS
FAN SPEED	1131 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	13	4	4
1ST FLOOR	7	2	2
BASEMENT	5	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# 77165



GROUND FLOOR PLAN EL. 2
LOT 204-1

WOB
CSA-F280-12
PACKAGE A1

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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.		
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1.		

REVISIONS

Client
GREENPARK HOMES

Project Name
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HAMILTON, ONTARIO
WOB
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HIGHGROVE 7E 2484 sqft

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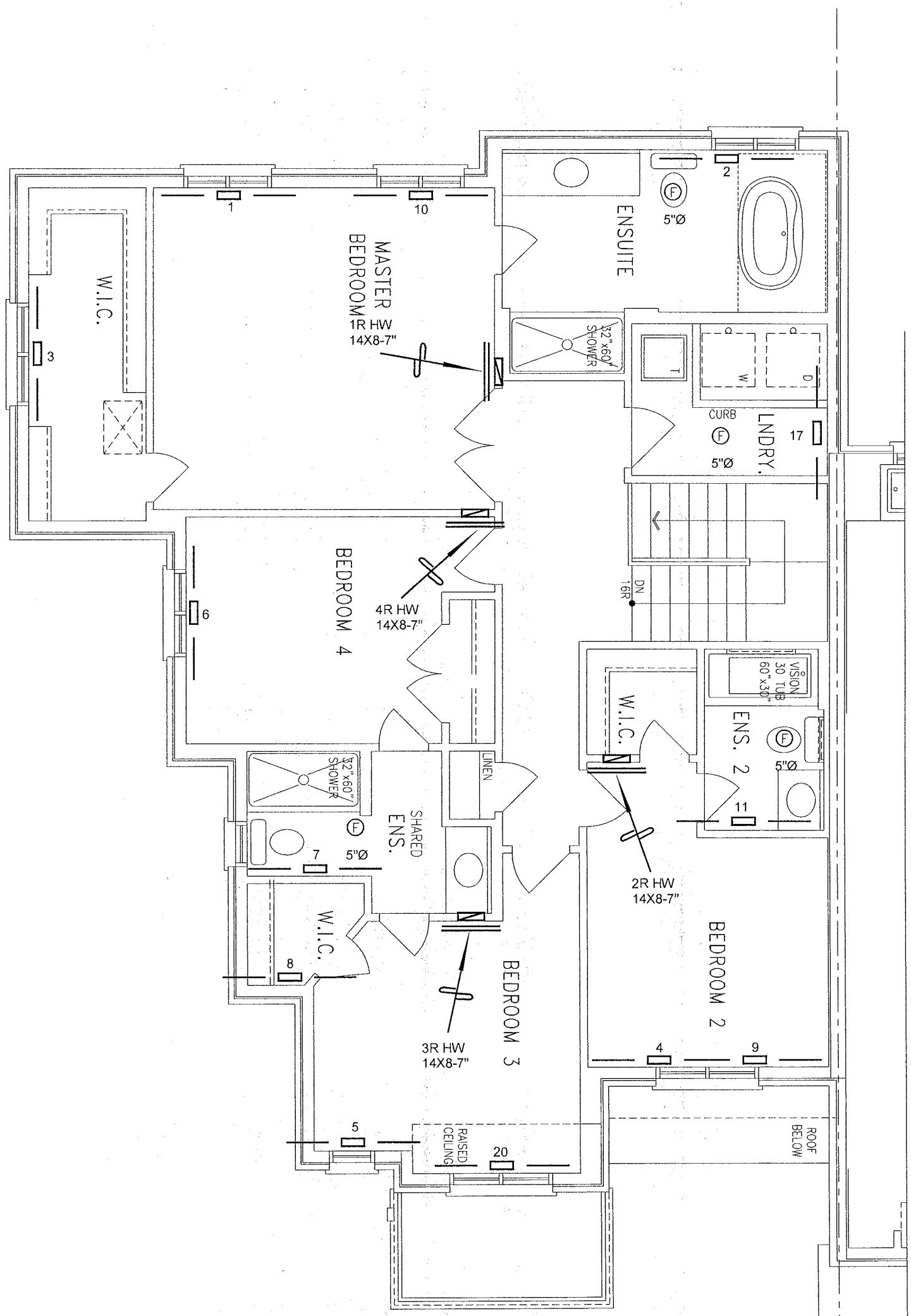
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date DEC/2017
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 77165



SECOND FLOOR PLAN EL. 2
LOT 204-1

WOB

CSA-F280-12

PACKAGE A1

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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
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REVISIONS

Client

GREENPARK HOMES

Project Name

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HAMILTON, ONTARIO
WOB
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Sheet Title

SECOND FLOOR HEATING LAYOUT

Date DEC/2017

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 77165