

SITE NAME: RUSSEL GARDENS PHASE 3

LOT 71

DATE: Oct-20

WINTER NATURAL AIR CHANGE RATE 0.310

HEAT LOSS AT °F. 71

CSA-F280-12

BUILDERS: GREENPARK HOMES

TYPE: VALLEYCREEK 12

GFA: 2726

LO# 87961

SUMMER NATURAL AIR CHANGE RATE 0.111

HEAT GAIN AT °F. 13

SB-12 PACKAGE A1

ROOM USE	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	WIC-3	ENS-3		
EXP. WALL	31	32	6	11	28	30	7	6	6		
CLG. HT.	9	9	9	9	9	9	9	9	9		
FACTORS											
GRS.WALL AREA	279	288	54	99	252	270	63	54	54		
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN		
NORTH	19.8 14.7	0 0 0	0 0 0	0 0 0	19 376 280	0 0 0	0 0 0	0 0 0	0 0 0	7 138 103	
EAST	19.8 37.8	0 0 0	0 0 0	0 0 0	0 0 0	36 712 1359	29 573 1095	0 0 0	13 257 491	0 0 0	
SOUTH	19.8 22.8	0 0 0	46 909 1047	0 0 0	0 0 0	0 0 0	42 830 956	11 217 250	0 0 0	0 0 0	
WEST	19.8 37.8	44 870 1661	13 267 491	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	235 974 177	229 949 172	54 224 41	80 332 60	216 895 162	199 825 160	52 216 39	41 170 31	47 195 35	
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	255 304 150	226 269 133	108 129 63	209 249 123	202 241 119	221 263 130	84 100 49	55 66 32	112 134 66	
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	
EXPOSED FLOOR	2.4 0.4	0 0 0	0 0 0	0 0 0	63 149 27	202 479 87	0 0 0	0 0 0	55 130 24	0 0 0	
BASEMENT/CRAWL HEAT LOSS		0	0	0	0	0	0	0	0	0	
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0	0	0	0	
SUBTOTAL HT LOSS		2143	2385	353	1106	2326	2492	533	623	732	
SUB TOTAL HT GAIN			1988	1843	104	430	1727	2331	339	578	
LEVEL FACTOR / MULTIPLIER	0.20 0.21	0.20 0.21	0.20 0.21	0.20 0.21	0.20 0.21	0.20 0.21	0.20 0.21	0.20 0.21	0.20 0.21	0.20 0.21	
AIR CHANGE HEAT LOSS		446	496	73	230	483	518	111	129	15	
AIR CHANGE HEAT GAIN		115	107	6	26	100	135	20	34	27	
DUCT LOSS		0	0	0	134	281	0	0	75	61	
DUCT GAIN		0	0	0	131	262	0	0	0	0	
HEAT GAIN PEOPLE	240	2	480	0	0	1	240	1	240	0	
HEAT GAIN APPLIANCES/LIGHTS			551	0	0	551	551	0	0	0	
TOTAL HT LOSS BTU/H		2694	2881	426	1469	3091	3010	644	827	973	
TOTAL HT GAIN x 1.3 BTU/H		4074	2535	143	1873	3744	4234	466	874	382	

ROOM USE	DIN	K/B/F	L/H	LND	WR	FOY					
EXP. WALL	15	76	39	7	23	18					
CLG. HT.	10	10	10	9	11	10					
FACTORS											
GRS.WALL AREA	150	750	390	63	253	180					
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN					
NORTH	19.8 14.7	0 0 0	12 237 177	0 0 0	0 0 0	7 138 103	0 0 0	0 0 0	0 0 0	168	
EAST	19.8 37.8	0 0 0	0 0 0	42 830 1586	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	5 99 74	
SOUTH	19.8 22.8	42 830 956	40 791 511	42 830 956	11 217 250	0 0 0	6 119 137	0 0 0	0 0 0	5 99 189	
WEST	19.8 37.8	0 0 0	77 1522 2907	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	10 198 228	
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	12 281 51	0 0 0	0 0 0	20 469 35	40 938 170	0 0 0	0 0 0	0 0 0	
NET EXPOSED WALL	4.1 0.8	108 448 81	609 2525 458	306 1269 230	52 216 39	226 937 170	134 556 101	20 469 85	20 469 85	20 469 85	
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	0 0 0	0 0 0	0 0 0	34 100 49	0 0 0	0 0 0	0 0 0	0 0 0	441 1474 267	
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	
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	0 0 0	
BASEMENT/CRAWL HEAT LOSS		0	0	0	0	0	0	0	0	0	
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0	0	0	0	
SUBTOTAL HT LOSS		1278	5356	2929	533	1544	1612			187	
SUB TOTAL HT GAIN			1037	4503	2772	339	358			1270	
LEVEL FACTOR / MULTIPLIER	0.30 0.32	0.30 0.32	0.30 0.32	0.30 0.32	0.20 0.21	0.30 0.32	0.30 0.32			196	
AIR CHANGE HEAT LOSS		414	1736	950	111	501	523			0.50 0.82	
AIR CHANGE HEAT GAIN		60	261	161	20	21	24			6873	
DUCT LOSS		0	0	0	0	0	0			60	
DUCT GAIN		0	0	0	0	0	0			0	
HEAT GAIN PEOPLE	240	0	0	0	0	0	0			0	
HEAT GAIN APPLIANCES/LIGHTS			551	551	551	551	551			551	
TOTAL HT LOSS BTU/H		1692	7093	3879	644	2045	2135			1270	
TOTAL HT GAIN x 1.3 BTU/H		2143	6911	4529	1182	492	560			265	

TOTAL HEAT GAIN BTU/H:

38563

TONS: 3.05

LOSS DUE TO VENTILATION LOAD BTU/H: 1515

STRUCTURAL HEAT LOSS: 48533

TOTAL COMBINED HEAT LOSS BTU/H: 50149

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.

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

SITE NAME: RUSSEL GARDENS PHASE 3
BUILDER: GREENPARK HOMES

LOT 71
TYPE: VALLEYCREEK 12

DATE: Oct-20

GFA: 2726 LO# 87981

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 48,633 TOTAL HEAT GAIN 36,268
AIR FLOW RATE CFM 23.26 AIR FLOW RATE CFM 31.17

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

#GOODMAN
GMEC960603BNA 60
FAN SPEED LOW

AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 57,600

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	14	8	5
R/A	0	0	5	2	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 r/a pressure 0.17
max s/a d/f press. loss 0.01 r/a grille press. loss 0.02
min adjusted pressure s/a 0.17 adjusted pressure r/a 0.15

MEDLOW 928
MEDIUM 1017
MEDIUM HIGH 1131

DESIGN CFM = 1131
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	WIC	BED-2	BED-3	BED-4	ENS-2	WIC-3	BED-3	MBR	ENS-3	BED-4	DIN	K/B/F	K/B/F	L/H	LND	W/R	FOY	K/B/F	BAS	BAS	BAS	BAS
RM LOSS MBH	1.30	2.88	0.43	1.47	1.55	1.50	0.64	0.83	1.55	1.30	0.49	1.50	1.69	2.36	2.36	1.94	0.64	2.05	2.14	2.36	3.05	3.05	3.05	3.05
CFM PER RUN HEAT	30	67	10	34	36	35	15	19	36	30	11	35	39	55	55	45	15	48	50	55	71	71	71	71
RM GAIN MBH	2.04	2.54	0.14	1.87	1.87	2.12	0.47	0.87	1.87	2.04	0.19	2.12	2.14	2.30	2.30	2.26	1.18	0.49	0.56	2.30	0.43	0.43	0.43	0.43
CFM PER RUN COOLING	63	79	4	58	58	66	15	27	58	63	6	66	67	72	72	71	37	15	17	72	13	13	13	13
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	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	44	41	18	44	52	53	40	48	56	31	41	51	26	21	23	48	32	23	37	37	21	47	7	21
EQUIVALENT LENGTH	130	140	100	210	160	230	191	210	160	130	170	200	110	110	110	140	130	150	190	110	110	110	100	120
TOTAL EFFECTIVE LENGTH	174	181	118	254	212	283	231	258	216	161	211	251	136	131	133	188	162	173	227	147	131	157	107	141
ADJUSTED PRESSURE	0.1	0.1	0.15	0.07	0.08	0.06	0.07	0.07	0.08	0.11	0.08	0.07	0.13	0.13	0.13	0.09	0.11	0.1	0.08	0.12	0.13	0.11	0.16	0.12
ROUND DUCT SIZE	5	5	4	6	5	6	4	4	5	5	4	6	5	5	5	5	4	4	5	5	5	5	5	5
HEATING VELOCITY (ft/min)	220	492	115	173	264	178	172	218	264	220	126	178	286	404	404	330	172	551	367	404	521	521	521	521
COOLING VELOCITY (ft/min)	463	580	46	296	426	337	172	310	426	463	69	337	492	529	529	521	424	172	125	529	95	95	95	95
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	F	E	F	B	B	A	B	A	B	E	B	A	C	D	D	A	C	C	A	E	D	E	F	C

RUN #	25	26	27
ROOM NAME	ENS-3	L/H	BAS
RM LOSS MBH	0.49	1.94	3.05
CFM PER RUN HEAT	11	45	71
RM GAIN MBH	0.19	2.26	0.43
CFM PER RUN COOLING	6	71	13
ADJUSTED PRESSURE	0.17	0.17	0.17
ACTUAL DUCT LGH.	47	43	40
EQUIVALENT LENGTH	180	170	130
TOTAL EFFECTIVE LENGTH	227	213	170
ADJUSTED PRESSURE	0.08	0.08	0.1
ROUND DUCT SIZE	4	5	5
HEATING VELOCITY (ft/min)	126	330	521
COOLING VELOCITY (ft/min)	69	521	95
OUTLET GRILL SIZE	3X10	3X10	3X10
TRUNK	B	A	A

SUPPLY AIR TRUNK SIZE															RETURN AIR TRUNK SIZE									
	TRUNK	STATIC	ROUND	RECT	VELOCITY					TRUNK	STATIC	ROUND	RECT	VELOCITY										
	CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)									
TRUNK A	300	0.06	9.6	10	x	8	540	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.05	0	0	x	8	0	
TRUNK B	443	0.06	11.1	14	x	8	570	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.05	0	0	x	8	0	
TRUNK C	616	0.06	12.6	18	x	8	616	TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.05	0	0	x	8	0	
TRUNK D	181	0.13	6.5	8	x	8	407	TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.05	0	0	x	8	0	
TRUNK E	223	0.10	7.6	8	x	8	502	TRUNK K	0	0.00	0	0	x	8	0	TRUNK S	0	0.05	0	0	x	8	0	
TRUNK F	515	0.10	10.3	12	x	8	773	TRUNK L	0	0.00	0	0	x	8	0	TRUNK T	0	0.05	0	0	x	8	0	
															TRUNK U	0	0.05	0	0	x	8	0		
RETURN AIR #	1	2	3	4	5	6	7	BR																
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	TRUNK V	270	0.05	9.7	12	x	8	405	
AIR VOLUME	85	135	75	135	330	135	85	0	0	0	0	0	0	0	0	TRUNK W	430	0.05	11.5	16	x	8	484	
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	TRUNK X	1131	0.05	16.5	32	x	8	636	
ACTUAL DUCT LGH.	50	37	62	81	32	45	37	1	1	1	1	1	1	1	15	TRUNK Y	415	0.05	11.3	14	x	8	534	
EQUIVALENT LENGTH	185	195	255	235	160	230	205	0	0	0	0	0	0	0	145	TRUNK Z	330	0.05	10.4	12	x	8	495	
TOTAL EFFECTIVE LN	235	232	317	296	192	275	242	1	1	1	1	1	1	1	160	DROP	1131	0.05	16.5	24	x	10	679	
ADJUSTED PRESSURE	0.06	0.06	0.05	0.05	0.08	0.05	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09									
ROUND DUCT SIZE	6	7.1	6	7.5	9.3	7.5	6	0	0	0	0	0	0	0	6.7									
INLET GRILL SIZE	8	8	8	8	8	8	8	0	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	14	14	14	30	14	14	0	0	0	0	0	0	0	14									

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
AIR VOLUME	85	135	75	135	330	135	85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	50	37	62	61	32	45	37	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	165	195	255	235	160	230	205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	235	232	317	296	192	275	242	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.06	0.06	0.05	0.05	0.08	0.05	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80
ROUND DUCT SIZE	6	7.1	6	7.5	9.3	7.5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	8	0	0	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	30	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: VALLEYCREEK 12
SITE NAME: RUSSEL GARDENS PHASE 3

LO # 87981
LOT 71

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 Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	111.3	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANE 65H Location: BSMT

79.5 cfm 3.0 sones ☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM	ΔT °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
ENS-2	FV-05-11VK1	50	☒	0.3
ENS-3	FV-05-11VK1	50	☒	0.3
WR	FV-05-11VK1	50	☒	0.3

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANE 65H

165 cfm high 64 cfm low

75 % Sensible Efficiency @ 32 deg F (0 deg C) ☒ HVI Approved

LOCATION OF INSTALLATION

Lot: Concession

Township: Plan:

Address:

Roll # Building Permit #

BUILDER: GREENPARK HOMES

Name:

Address:

City:

Telephone #: Fax #:

INSTALLING CONTRACTOR

Name:

Address:

City:

Telephone #: Fax #:

DESIGNER CERTIFICATION

I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.

Name: HVAC Designs Ltd.

Signature: *Michael O'Rourke*

HRAI # 001820

Date: October-20

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

LO#: 87981

Model: VALLEYCREEK 12

Builder: GREENPARK HOMES

Date: 28/10/2020

Volume Calculation
House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1179	8	9432
First	1179	10	11790
Second	1547	9	13923
Third	0	9	0
Fourth	0	9	0
Total:			35,145.0 ft³
Total:			995.2 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.310
SUMMER NATURAL AIR CHANGE RATE	0.111

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

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

$$0.310 \times 276.44 \times 39^\circ\text{C} \times 1.2 = 4029 \text{ W}$$

$$= 13746 \text{ Btu/h}$$

6.2.6 Sensible Gain due to Air Leakage

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

$$0.111 \times 276.44 \times 7^\circ\text{C} \times 1.2 = 261 \text{ W}$$

$$= 892 \text{ Btu/h}$$

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

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

6.2.7 Sensible heat Gain due to Ventilation

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

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

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

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

Level	Level Factor (LF)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HL _{clevel})
1	0.5	13,746	8,358	0.822
2	0.3		12,720	0.324
3	0.2		13,231	0.208
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: VALLEYCREEK 12	LOT 71	BUILDER: GREENPARK HOMES
SFQT: 2726	LO# 87981	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):	35145.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	5.0 ft
LENGTH: 52.0 ft	WIDTH: 32.0 ft	EXPOSED PERIMETER:	147.0 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	-

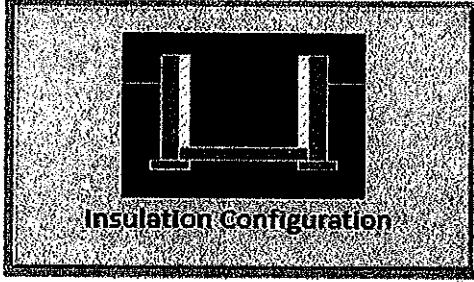
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

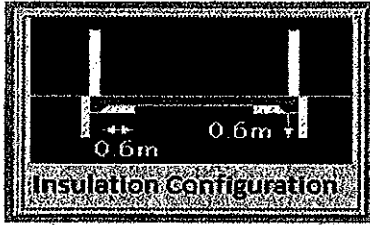
Weather Station Description		
Province:	Ontario	
Region:	Hamilton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.8	 Insulation Configuration
Floor Width (m):	9.8	
Exposed Perimeter (m):	44.8	
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):	1392	

TYPE: VALLEYCREEK 12
LO# 87981

LOT 71

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):	4.6	
Exposed Perimeter (m):	6.4	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		55

TYPE: VALLEYCREEK 12
LO# 87981

LOT 71

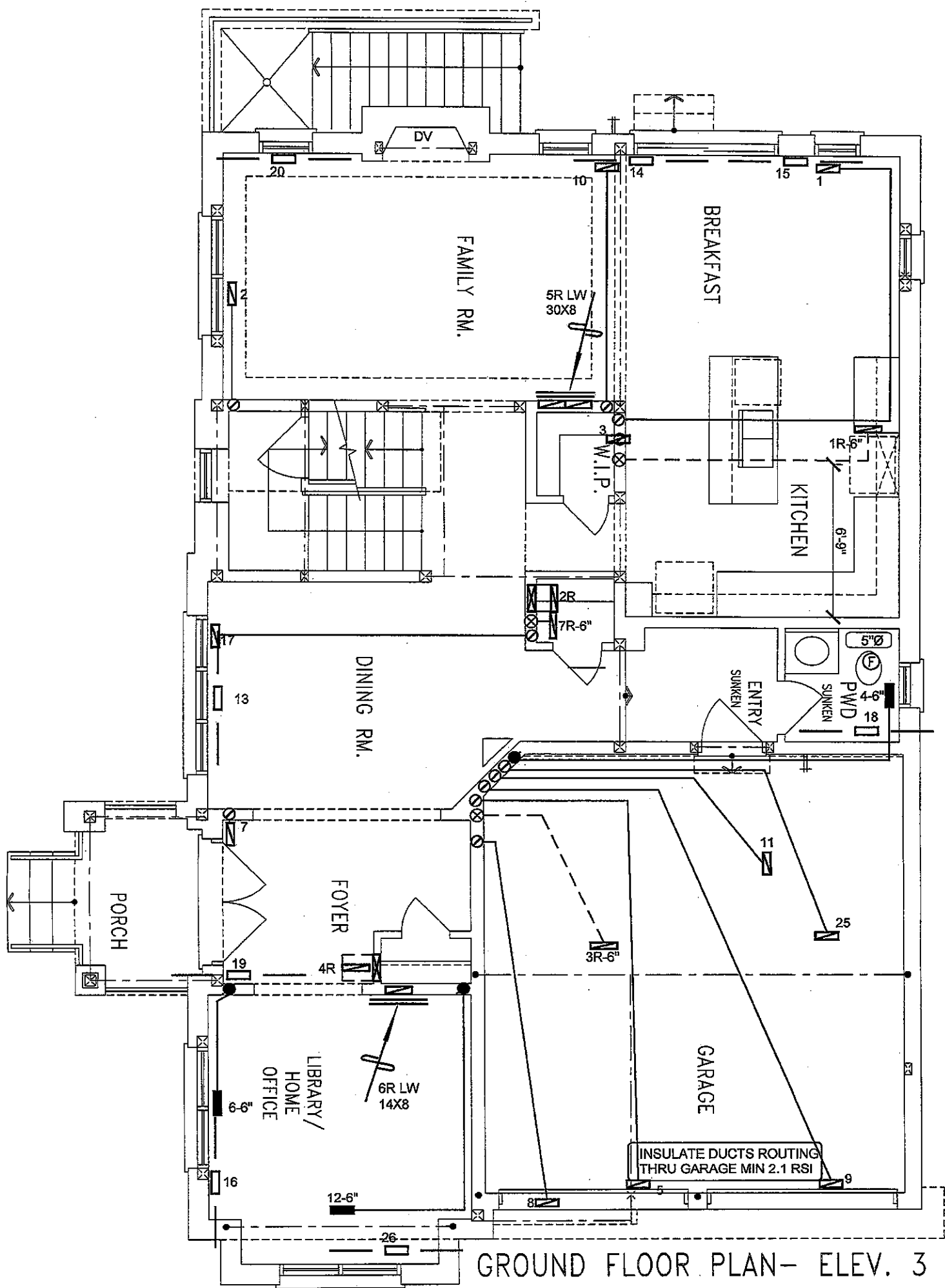
Air Infiltration Residential Load Calculator

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):	6.71			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	995.2			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.		1326.6 cm ²	
	3.57		ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply		Total Exhaust	
	37.5		37.5	
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.310			
Cooling Air Leakage Rate (ACH/H):	0.111			

TYPE: VALLEYCREEK 12
LO# 87981

LOT 71



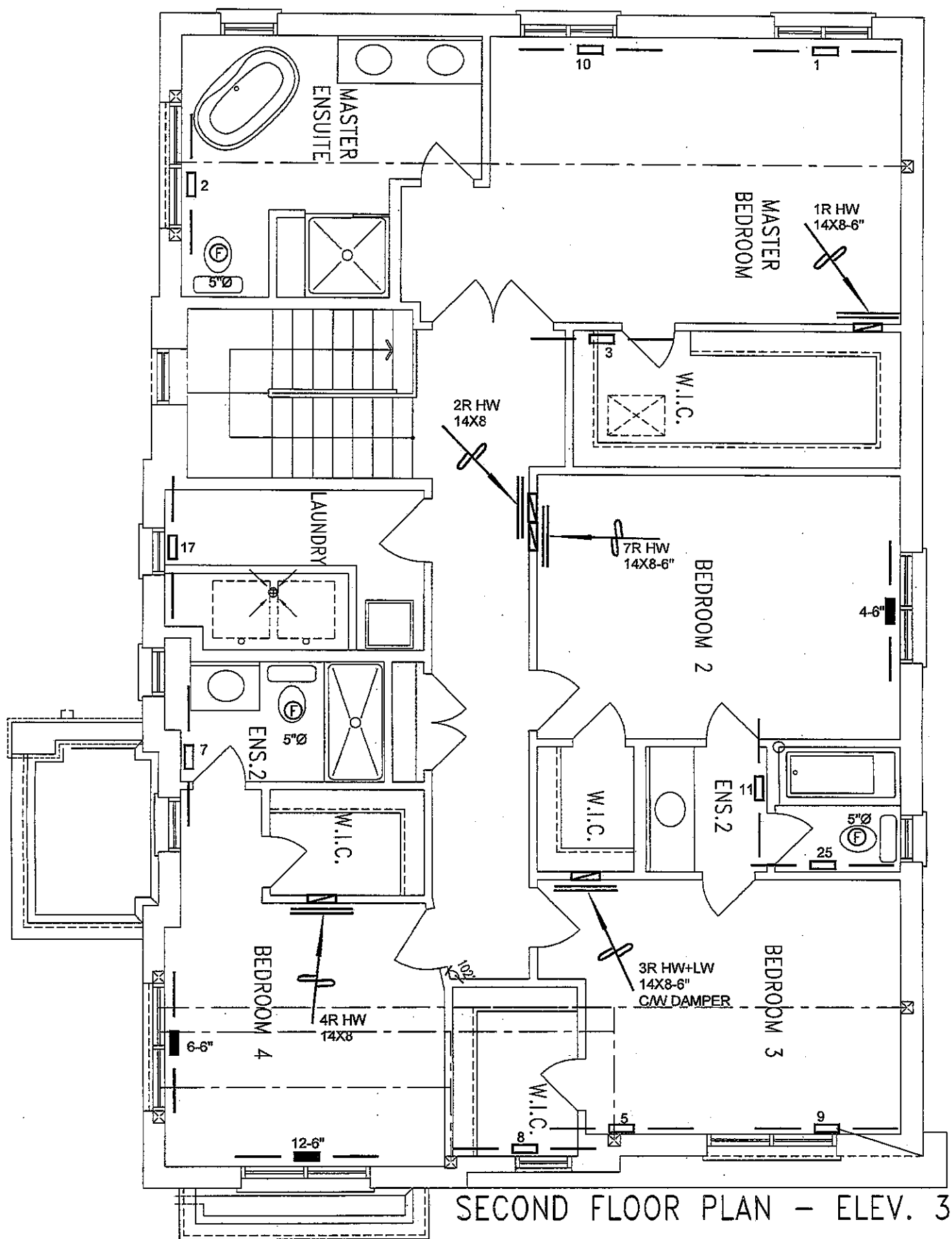
LOT 71
WUB
CSA-F280-12
PACKAGE A1

I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.5 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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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 RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			Date OCT/2020	
LOT 71 VALLEYCREEK 12 2726 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO# 87981	



SECOND FLOOR PLAN - ELEV. 3

LOT 71
WUB
CSA-F280-12
PACKAGE A1

I MICHAEL O'Rourke HAVE REVIEW
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C.3.2.1 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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LOT 71 VALLEYCREEK 12 2726 sqft			BCIN# 19669	
			LO#	87981