

SITE NAME: RUSSEL GARDENS PHASE 3				LOT 270				DATE: Dec-20				WINTER NATURAL AIR CHANGE RATE 0.347				HEAT LOSS AT °F: 71				CSA-F280-12			
BUILDER: GREENPARK HOMES				TYPE: VALLEYCREEK 4				LO# 88520				SUMMER NATURAL AIR CHANGE RATE 0.124				HEAT GAIN AT °F: 13				SB-12 PACKAGE A1			
ROOM USE																							
EXP. WALL																							
CLG. HT.																							
FACTORS																							
GRS.WALL AREA	LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
GLAZING																							
NORTH	19.8	16.0	0	0	0	9	178	144		16	316	256	0	0	0	7	138	112		0	0	0	
EAST	19.8	41.6	0	0	0	0	0	0		0	0	0	24	474	397	34	672	1413		12	237	499	
SOUTH	19.8	24.9	16	316	398	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	
WEST	19.8	41.6	36	712	1496	16	316	665		0	0	0	0	0	0	0	0	0		9	0	0	
SKYLT.	34.6	101.5	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0		9	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	
NET EXPOSED WALL	4.1	0.8	317	1314	238	245	1016	184		83	344	62	228	945	171	317	1314	238		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	
EXPOSED CLG	1.2	0.6	363	433	213	220	262	129		207	247	122	214	255	126	220	262	129		119	142	70	
NO ATTIC EXPOSED CLG	2.6	1.3	0	0	0	0	0	0		0	0	0	0	0	0	40	102	60		0	0	0	
EXPOSED FLOOR	2.4	0.4	0	0	0	0	0	0		0	0	0	214	507	92	0	0	0		86	204	37	
BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0	0		0	0	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	0	0	0	0	0		0	0	0	
SUBTOTAL HT LOSS			2775			1772				907			2182			2351				679			
SUB TOTAL HT GAIN				2346			1122				440			1386			1831			254			
LEVEL FACTOR / MULTIPLIER	0.20	0.28		0.20	0.28					0.20	0.28		0.20	0.28		0.20	0.28			0.20	0.28		
AIR CHANGE HEAT LOSS			730			505				258			622			670				193			
AIR CHANGE HEAT GAIN				194		93					36			115			152			21			
DUCT LOSS			0		0					0				280			0			87			
DUCT GAIN			0		0					0				255			0			28			
HEAT GAIN PEOPLE	240		2		480	0	0			1		240	1		240	1		240	0		0		
HEAT GAIN APPLIANCES/LIGHTS					810	0	0					810			810			810	0		0		
TOTAL HT LOSS BTU/H			3565			2277				1166			3084			3020				959			
TOTAL HT GAIN x 1.3 BTU/H				4878			1579				1984			3648			3942			393			

ROOM USE																							
EXP. WALL																							
CLG. HT.																							
FACTORS																							
GRS.WALL AREA	LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
GLAZING																							
NORTH	19.8	16.0	0	0	0	18	356	288		0	0	0	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	0	0	0		0	0	0	
SOUTH	19.8	24.9	26	514	647	0	0	0		0	0	0	8	158	199	8	158	199		0	0	0	
WEST	19.8	41.6	0	0	0	0	0	0		70	1384	2909	40	791	1662	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	
DOORS	23.5	4.3	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	403	1671	303	202	837	162		315	1306	237	367	1521	276	73	303	55		36	149	27	
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	
EXPOSED CLG	1.2	0.6	0	0	0	0	0	0		0	0	0	115	137	68	0	0	0		0	0	0	
NO ATTIC EXPOSED CLG	2.6	1.3	0	0	0	0	0	0		16	41	20	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	
BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0	0		0	0	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	0	0	0	0	0		0	0	0	
SUBTOTAL HT LOSS			2185			1193				2690			2353			598				2276			
SUB TOTAL HT GAIN				950		439					1558			322			226			413			
LEVEL FACTOR / MULTIPLIER	0.30	0.43		0.30	0.43					0.30	0.43		0.20	0.28		0.30	0.43			0.30	0.43		
AIR CHANGE HEAT LOSS			948			618				1167			1021			170				387			
AIR CHANGE HEAT GAIN				79		36					261			162			27			34			
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		0	
HEAT GAIN APPLIANCES/LIGHTS					810		810					810			810			810					
TOTAL HT LOSS BTU/H			3132			1711				3856			3374			768				3263			
TOTAL HT GAIN x 1.3 BTU/H				2381			1672				5481			3810			1505			581			

TOTAL HEAT GAIN BTU/H: 36314

TONS: 3.03

LOSS DUE TO VENTILATION LOAD BTU/H: 1515

STRUCTURAL HEAT LOSS: 50099

TOTAL COMBINED HEAT LOSS BTU/H: 51615

Michael O'Rourke

SITE NAME: RUSSEL GARDENS PHASE 3
BUILDER: GREENPARK HOMES

LOT 270
TYPE: VALLEYCREEK 4

DATE: Dec-20

GFA: 2804 LO# 88620

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 50,099 TOTAL HEAT GAIN 36,039
AIR FLOW RATE CFM 22.58 AIR FLOW RATE CFM 31.38

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 0.03
min adjusted pressure s/a 0.15

r/a pressure 0.17
r/a grille press. Loss 0.02
adjusted pressure r/a 0.15

#GOODMAN
GMCC960603BNA 60
FAN SPEED LOW
MEDLOW 928
MEDIUM 1017
HIGH 1131

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

DESIGN CFM = 1131
CFM @ .6" E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	12	8	4
R/A	0	0	4	3	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	BED-3	BED-2	BED-3	BED-4	S-BATH	S-BATH	BED-4	MBR	ENS-4	LV/DN	LIB	BF/KT	BF/KT	FAM	LAUN	WVR	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.78	2.28	1.54	1.17	1.54	1.51	0.48	0.48	1.51	1.78	1.01	3.13	1.71	1.93	1.93	3.37	0.77	0.44	3.26	1.14	4.33	4.33	4.33	4.33
CFM PER RUN HEAT	40	51	35	26	35	34	11	11	34	40	23	71	39	44	44	76	17	10	74	26	98	98	98	98
RM GAIN MBH.	2.49	1.58	1.82	1.98	1.82	1.97	0.20	0.20	1.97	2.49	0.95	2.39	1.67	2.74	2.74	3.81	1.51	0.32	0.58	0.20	0.65	0.65	0.65	0.65
CFM PER RUN COOLING	78	50	57	62	57	62	6	6	62	78	30	75	52	86	86	120	47	10	18	6	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	0.15	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	48	44	46	30	42	51	32	36	44	33	34	35	18	25	32	28	31	33	40	13	24	26	16	36
EQUIVALENT LENGTH	180	120	140	160	130	150	160	150	130	140	120	150	150	120	140	130	200	160	120	190	100	90	150	130
TOTAL EFFECTIVE LENGTH	228	164	186	190	172	201	192	186	174	173	154	185	168	145	172	158	231	193	160	203	124	116	166	166
ADJUSTED PRESSURE	0.08	0.1	0.09	0.09	0.1	0.09	0.09	0.09	0.1	0.1	0.11	0.09	0.1	0.11	0.09	0.1	0.07	0.09	0.11	0.08	0.13	0.14	0.1	0.1
ROUND DUCT SIZE	6	5	5	6	5	5	4	4	5	6	4	6	5	6	6	6	5	4	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	204	374	257	133	257	250	126	126	250	204	264	362	286	224	224	388	125	115	543	298	500	500	500	500
COOLING VELOCITY (ft/min)	398	367	419	316	419	455	69	69	455	398	344	382	382	438	438	612	345	115	132	69	102	102	102	102
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	A	D	B	D	C	D	D	C	A	D	C	B	A	A	A	D	C	C	D	B	B	D	C

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	BED-3	BED-2	BED-3	BED-4	S-BATH	S-BATH	BED-4	MBR	ENS-4	LV/DN	LIB	BF/KT	BF/KT	FAM	LAUN	WVR	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.78	2.28	1.54	1.17	1.54	1.51	0.48	0.48	1.51	1.78	1.01	3.13	1.71	1.93	1.93	3.37	0.77	0.44	3.26	1.14	4.33	4.33	4.33	4.33
CFM PER RUN HEAT	40	51	35	26	35	34	11	11	34	40	23	71	39	44	44	76	17	10	74	26	98	98	98	98
RM GAIN MBH.	2.49	1.58	1.82	1.98	1.82	1.97	0.20	0.20	1.97	2.49	0.95	2.39	1.67	2.74	2.74	3.81	1.51	0.32	0.58	0.20	0.65	0.65	0.65	0.65
CFM PER RUN COOLING	78	50	57	62	57	62	6	6	62	78	30	75	52	86	86	120	47	10	18	6	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	0.15	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	48	44	46	30	42	51	32	36	44	33	34	35	18	25	32	28	31	33	40	13	24	26	16	36
EQUIVALENT LENGTH	180	120	140	160	130	150	160	150	130	140	120	150	150	120	140	130	200	160	120	190	100	90	150	130
TOTAL EFFECTIVE LENGTH	228	164	186	190	172	201	192	186	174	173	154	185	168	145	172	158	231	193	160	203	124	116	166	166
ADJUSTED PRESSURE	0.08	0.1	0.09	0.09	0.1	0.09	0.09	0.09	0.1	0.1	0.11	0.09	0.1	0.11	0.09	0.1	0.07	0.09	0.11	0.08	0.13	0.14	0.1	0.1
ROUND DUCT SIZE	6	5	5	6	5	5	4	4	5	6	4	6	5	6	6	6	5	4	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	204	374	257	133	257	250	126	126	250	204	264	362	286	224	224	388	125	115	543	298	500	500	500	500
COOLING VELOCITY (ft/min)	398	367	419	316	419	455	69	69	455	398	344	382	382	438	438	612	345	115	132	69	102	102	102	102
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	A	D	B	D	C	D	D	C	A	D	C	B	A	A	A	D	C	C	D	B	B	D	C

SUPPLY AIR TRUNK SIZE	TRUNK	STATIC	ROUND	RECT	VELOCITY	TRUNK	STATIC	ROUND	RECT	VELOCITY	RETURN AIR TRUNK SIZE	TRUNK	STATIC	ROUND	RECT	VELOCITY
	CFM	PRESS.	DUCT	DUCT	(ft/min)	CFM	PRESS.	DUCT	DUCT	(ft/min)		CFM	PRESS.	DUCT	DUCT	(ft/min)
TRUNK A	295	0.08	8.9	14	x 8 379	TRUNK G	0	0.00	0	0	TRUNK O	0	0.06	0	0	x 8 0
TRUNK B	556	0.08	11.3	18	x 8 556	TRUNK H	0	0.00	0	0	TRUNK P	0	0.06	0	0	x 8 0
TRUNK C	321	0.09	8.9	10	x 8 578	TRUNK I	0	0.00	0	0	TRUNK Q	0	0.06	0	0	x 8 0
TRUNK D	577	0.07	11.3	16	x 8 649	TRUNK J	0	0.00	0	0	TRUNK R	0	0.06	0	0	x 8 0
TRUNK E	0	0.00	0	0	x 8 0	TRUNK K	0	0.00	0	0	TRUNK S	0	0.06	0	0	x 8 0
TRUNK F	0	0.00	0	0	x 8 0	TRUNK L	0	0.00	0	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

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	120	185	105	290	105	105	95	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.	39	38	51	30	18	22	45	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	215	145	135	150	175	175	175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	254	183	186	180	193	197	220	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.06	0.08	0.08	0.08	0.08	0.08	0.07	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	6.8	7.5	6	8.8	6	6	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	30	12	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: VALLEYCREEK 4
SITE NAME: RUSSEL GARDENS PHASE 3

LO # 88820
LOT 270

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
S-BATH	FV-05-11VK1	50	☒	0.3
ENS-4	FV-05-11VK1	50	☒	0.3
W/R	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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	December-20

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 88620	Model: VALLEYCREEK 4	Builder: GREENPARK HOMES	Date: 14/12/2020																																																									
Volume Calculation			Air Change & Delta T Data																																																									
House Volume <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr><td>Bsmt</td><td>1237</td><td>9</td><td>11133</td></tr> <tr><td>First</td><td>1237</td><td>11</td><td>13607</td></tr> <tr><td>Second</td><td>1577</td><td>9</td><td>14193</td></tr> <tr><td>Third</td><td>0</td><td>9</td><td>0</td></tr> <tr><td>Fourth</td><td>0</td><td>9</td><td>0</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>38,933.0 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>1102.5 m³</td></tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1237	9	11133	First	1237	11	13607	Second	1577	9	14193	Third	0	9	0	Fourth	0	9	0	Total:			38,933.0 ft³	Total:			1102.5 m³	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 20%; text-align: center;">0.347</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.124</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DTDh</td> <td style="text-align: center;">22</td> <td style="text-align: center;">-17</td> <td style="text-align: center;">39</td> <td style="text-align: center;">71</td> </tr> <tr> <td>Summer DTDc</td> <td style="text-align: center;">24</td> <td style="text-align: center;">31</td> <td style="text-align: center;">7</td> <td style="text-align: center;">13</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.347	SUMMER NATURAL AIR CHANGE RATE	0.124	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-17	39	71	Summer DTDc	24	31	7	13
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.347 x 306.24 x 39 °C x 1.2 = 5001 W = 17062 Btu/h			$HG_{satb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.124 x 306.24 x 7 °C x 1.2 = 325 W = 1108 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 71 °F x 1.08 x 0.25 = 1515 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 13 °F x 1.08 x 0.25 = 275 Btu/h																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{ (HL_{agcr} + HL_{bgcr}) \div (HL_{agcleve} + HL_{bgcleve}) \}$																																																												
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{cleve})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																								
1	0.5	17,062	8,799	0.970																																																								
2	0.3		11,800	0.434																																																								
3	0.2		11,979	0.285																																																								
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 HLairve = 0																																																												

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: VALLEYCREEK 4	LOT 270	BUILDER: GREENPARK HOMES
SFQT: 2804	LO# 88620	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:	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):	38933.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	2.00	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 54.0 ft	WIDTH: 34.0 ft	EXPOSED PERIMETER:	176.0 ft

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

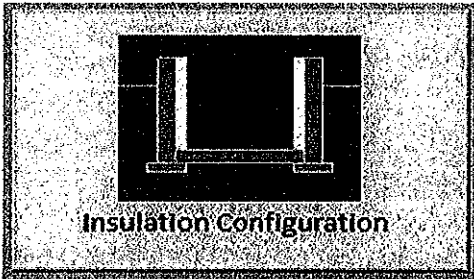
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20 ci	21.12
Below Grade Slab Entire surface > 600 mm below 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):	16.5	 Insulation Configuration
Floor Width (m):	10.4	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.7	
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):		1702

TYPE: VALLEYCREEK 4
LO# 88620

LOT 270

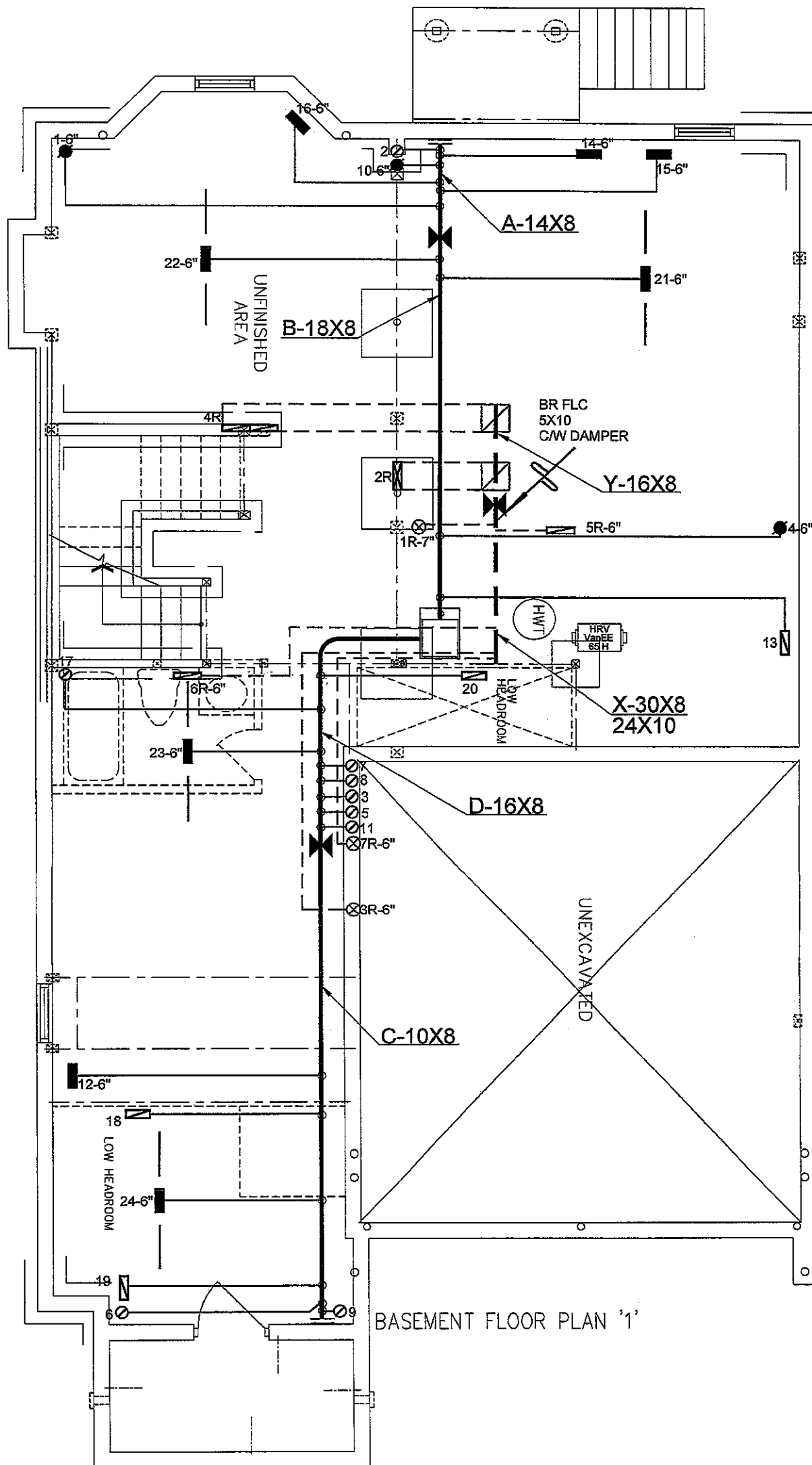
Air Infiltration Residential Load Calculator

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):	7.92			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1102.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1469.6 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):	0.347			
Cooling Air Leakage Rate (ACH/H):	0.124			

TYPE: VALLEYCREEK 4
LO# 88620

LOT 270



BASEMENT FLOOR PLAN '1'

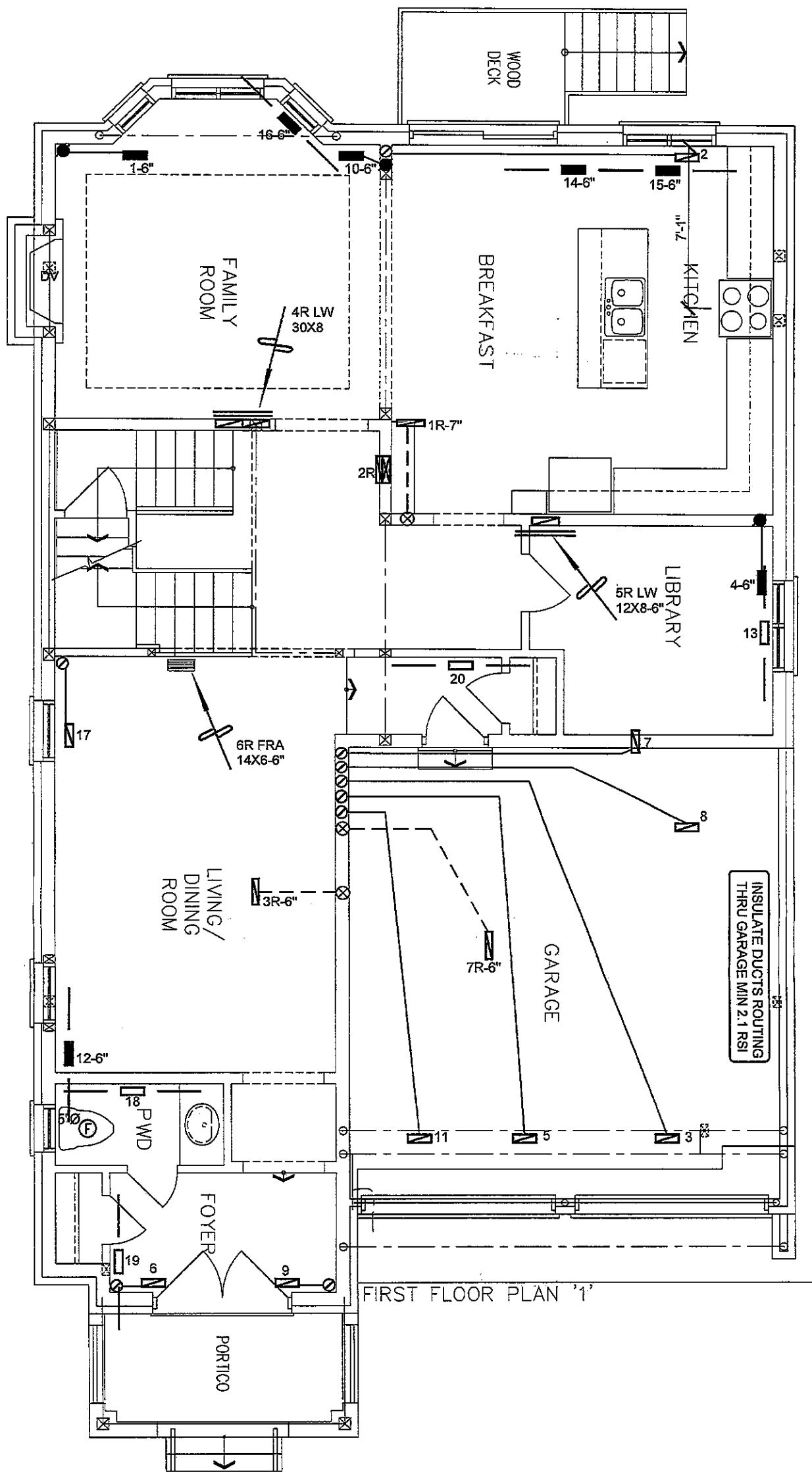
LOT 270
WOD
CSA-F280-12
PACKAGE A1

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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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	HEAT LOSS 51615 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title	
Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			MAKE GOODMAN	3RD FLOOR						BASEMENT HEATING LAYOUT
			MODEL GMEC960603BNA	2ND FLOOR			12	4	3	
			INPUT 60 MBTU/H	1ST FLOOR			8	3	2	
			OUTPUT 57.6 MBTU/H	BASEMENT			4	1	0	
LOT 270 VALLEYCREEK 4 2804 sqft		COOLING 3.0 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							Date DEC/2020
		FAN SPEED 1131 cfm @ 0.6" w.c.								Scale 3/16" = 1'-0"
									BCIN# 19669	
									LO#	88620



FIRST FLOOR PLAN '1'

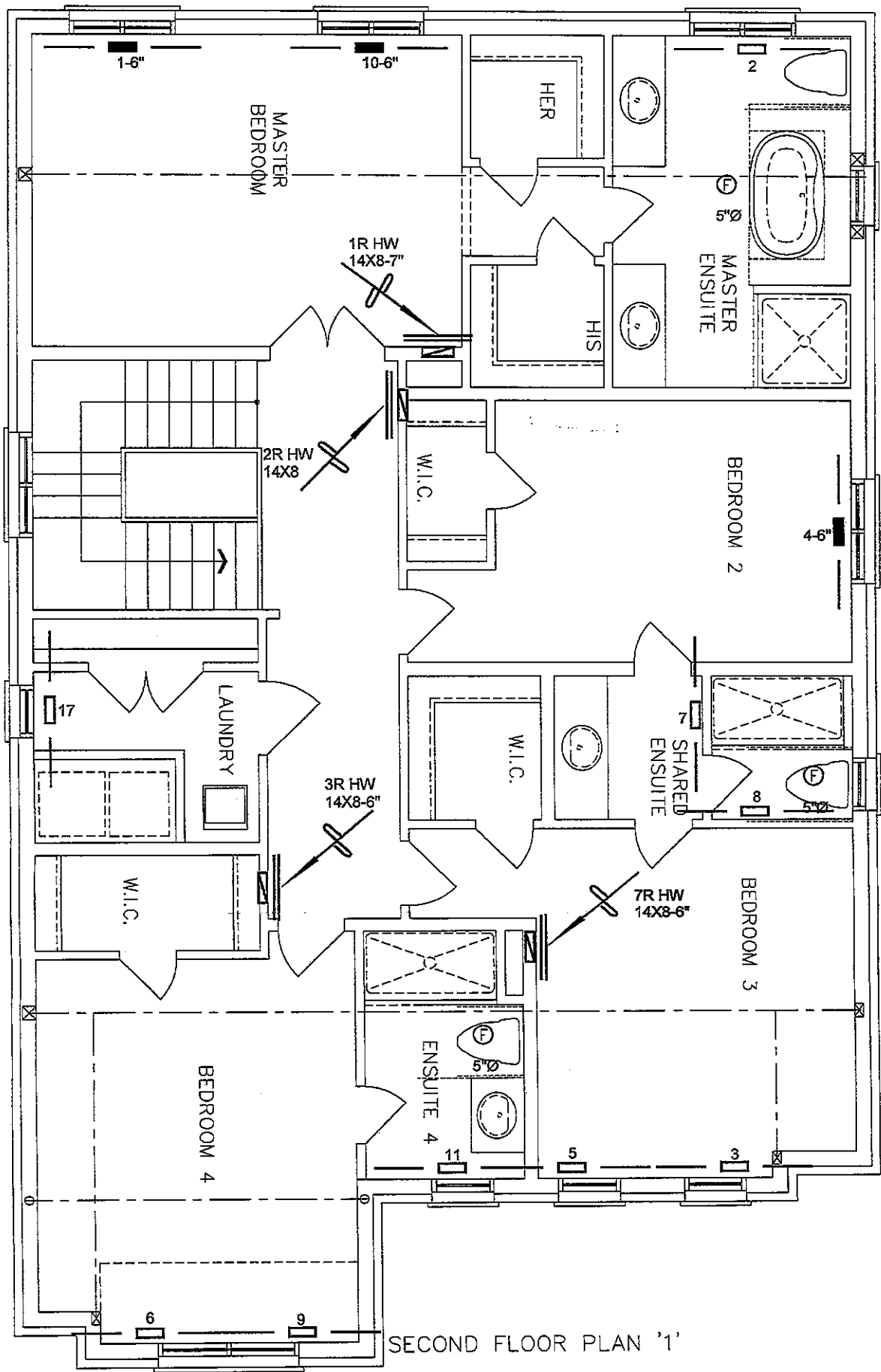
LOT 270
WOD
CSA-F280-12
PACKAGE A1

I MICHAEL O'BRIEN HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 32.5 OF THE BUILDING CODE.
Michael O'Brien
Michael O'Brien, 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 DEC/2020	
LOT 270 VALLEYCREEK 4 2804 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO#	88620



SECOND FLOOR PLAN '1'

LOT 270
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.32.3 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.	
	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
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER		REVISIONS

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Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			Date DEC/2020	
LOT 270 VALLEYCREEK 4 2804 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO#	88620