

SITE NAME: RUSSEL GARDENS PHASE 3				LOT 180				DATE: Nov-20				WINTER NATURAL AIR CHANGE RATE 0.319				HEAT LOSS AT °F. 71				CSA-F280-12									
BUILDER: GREENPARK HOMES				TYPE: MOUNTAINASH 6				GFA: 3350				LO# 88160				SUMMER NATURAL AIR CHANGE RATE 0.114				HEAT GAIN AT °F. 13				SB-12 PACKAGE A1					
ROOM USE		MBR		ENS		WIC		BED-2		BED-3		BED-4		S-ENS		BED-5		WIC-3		ENS-2									
EXP. WALL		33		29		8		34		38		26		0		11		8		8									
CLG. HT.		9		9		9		8		9		9		9		9		9		9									
FACTORS																													
GRS.WALL AREA		LOSS GAIN		297		261		72		308		287		234		0		99		72		54							
GLAZING		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	14	277	224	0	0	0	0	0	0	0	0	0	0	0				
EAST		19.8	41.8	0	0	0	0	0	0	0	33	771	1621	64	1265	2669	0	0	0	0	23	455	958	0	0				
SOUTH		19.8	24.9	0	0	0	7	138	174	0	0	0	0	0	11	217	274	0	0	0	0	7	138	174					
WEST		19.8	41.8	32	633	1330	14	277	582	0	0	0	0	0	0	0	11	217	274	0	0	0	0	0					
SKYL.T.		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	266	1099	199	240	986	180	72	298	54	287	1107	201	219	908	156	223	924	168	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					
EXPOSED CLG		1.2	0.6	286	340	167	294	243	120	130	165	76	272	324	190	188	236	116	180	215	106	103	123	61					
NO ATTIC EXPOSED CLG		2.8	1.3	0	0	0	0	0	0	0	0	0	30	77	38	0	0	0	0	0	0	10	26	13					
EXPOSED FLOOR		2.4	0.4	0	0	0	0	0	0	0	0	286	678	123	30	71	13	0	0	123	291	53	0	0					
BASEMENT/CRAWL HEAT LOSS																													
SLAB ON GRADE HEAT LOSS																													
SUBTOTAL HT LOSS				2971		1653		453		2880		2834		1357		414		931		871		455							
SUB TOTAL HT GAIN				1698		1058		131		2104		3215		547		113		931		453		1058		270					
LEVEL FACTOR / MULTIPLIER		0.20 0.25		0.20 0.25		0.20 0.25		0.20 0.25		0.20 0.25		0.20 0.25		0.20 0.25		0.20 0.25		0.20 0.25		0.20 0.25		0.20 0.25		0.20 0.25					
AIR CHANGE HEAT LOSS		625		418		115		730		719		344		105		211		221		115									
AIR CHANGE HEAT GAIN		130		81		10		161		245		42		9		35		81		21									
DUCT LOSS		0		0		0		361		355		0		52		0		109		0									
DUCT GAIN		0		0		0		0		308		420		0		62		0		164		0		0					
HEAT GAIN PEOPLE		240		2		480		0		0		1		240		0		1		240		0		0					
HEAT GAIN APPLIANCES/LIGHTS				498		498		498		498		498		498		498		498		498		498		498					
TOTAL HT LOSS BTUH				2586		2073		568		3971		3907		1701		671		1042		1201		570							
TOTAL HT GAIN x 1.3 BTUH				3846		2126		830		4295		6006		1726		887		1608		2339		1025							
CITY OF HAMILTON BUILDING DIVISION Planning & Development Department FEB 04 2021																								CHECKED BY		DATE		DATE	

ROOM USE		L/D	FAM	KB	L/H	LND	PWD	FOY	MUD				
EXP. WALL		50	36	44	10	7	7	28	24				BAS
CLG. HT.		11	11	11	11	9	11	11	12				8
FACTORS													
GRS.WALL AREA	LOSS GAIN	850	386	494	110	63	77	398	288				910
GLAZING	LOSS GAIN												LOSS GAIN
NORTH	19.8 16.0	0 0 0	0 0 0	8 158 128	18 356 288	7 138 112	0 0 0	14 277 224	0 0 0				5 99 80
EAST	19.8 41.8	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	20 395 831	0 0 0				0 0 0
SOUTH	19.8 24.9	38 712 896	0 0 0	16 318 398	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0				10 188 248
WEST	19.8 41.8	0 0 0	45 908 1511	33 682 1371	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0				5 99 208
SKYL.T.	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	20 469 85	0 0 0	0 0 0	0 0 0	40 938 170	20 489 85				20 469 85
NET EXPOSED WALL	4.1 0.8	514 2131 386	339 1405 255	497 1687 306	82 381 69	58 232 42	77 319 68	234 970 176	268 1111 201				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				545 1825 331
EXPOSED CLG	1.2 0.6	0 0 0	0 0 0	28 35 17	0 0 0	111 132 65	0 0 0	0 0 0	0 0 0				0 0 0
NO ATTIC EXPOSED CLG	2.8 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				6081
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0	0	0				8770
SUBTOTAL HT LOSS		2842	2315	3318	737	503	319	2580	1580				963
SUB TOTAL HT GAIN			1283	2168	2305	357	68	1481	288				1.04
LEVEL FACTOR / MULTIPLIER	0.30 0.40		0.30 0.40	0.30 0.40	0.30 0.40	0.20 0.25	0.30 0.40	0.30 0.40	0.30 0.40				0.50
AIR CHANGE HEAT LOSS	1131		921	1320	283	128	127	1027	828				9080
AIR CHANGE HEAT GAIN		98	166	177	27	17	4	107	22				73
DUCT LOSS		0	0	0	0	0	0	0	0				0
DUCT GAIN		0	0	0	0	0	0	0	0				0
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	0				0
HEAT GAIN APPLIANCES/LIGHTS		498	498	498	498	498	498	498	498				498
TOTAL HT LOSS BTUH		3974	3236	4538	1031	630	446	3507	2209				17851
TOTAL HT GAIN x 1.3 BTUH		2443	3680	3875	1147	964	81	1960	1049				1981

TOTAL HEAT GAIN BTUH:

41986

TONS: 3.50

LOSS DUE TO VENTILATION LOAD BTUH: 1819

STRUCTURAL HEAT LOSS: 56822

TOTAL COMBINED HEAT LOSS BTUH: 57640

SITE NAME: RUSSEL GARDENS PHASE 3
 BUILDER: GREENPARK HOMES

 LOT 180
 TYPE: MOUNTAINASH 6

DATE: Nov-20

GFA: 3360 LO# 88160

 HEATING CFM 1504 COOLING CFM 1504
 TOTAL HEAT LOSS 55,822 TOTAL HEAT GAIN 41,856
 AIR FLOW RATE CFM 26.94 AIR FLOW RATE CFM 35.11

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

 #GOODMAN
 GMEC960804CNA 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 @ 8" E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	17	11	5
R/A	0	0	6	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	WIC	BED-2	BED-3	BED-4	S-ENS	BED-5	WIC-3	MBR	ENS-2	L/D	FAM	K/B	K/B	L/H	LND	FOY	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.30	1.04	0.57	1.89	1.30	1.70	0.29	1.04	1.20	1.30	0.57	1.99	1.62	2.32	2.32	1.03	0.63	1.80	1.80	2.21	3.57	3.57	3.57	3.57
CFM PER RUN HEAT	35	28	15	53	35	46	8	28	32	35	15	54	44	62	62	28	17	49	49	60	96	96	96	96
RM GAIN MBH.	1.82	1.06	0.83	2.15	2.00	1.73	0.44	1.61	2.34	1.82	1.02	1.22	1.84	1.94	1.84	1.15	0.85	0.98	0.98	1.05	0.40	0.40	0.40	0.40
CFM PER RUN COOLING	66	38	30	78	72	62	16	58	84	66	37	44	66	70	70	41	34	35	35	38	14	14	14	14
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	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	0.16
ACTUAL DUCT LGH.	38	48	22	65	67	49	44	34	56	26	45	35	26	31	24	19	49	53	46	23	15	22	33	33
EQUIVALENT LENGTH	100	170	180	150	200	190	170	150	160	170	180	120	110	140	130	100	180	140	130	120	140	120	120	180
TOTAL EFFECTIVE LENGTH	136	218	182	215	267	239	214	184	216	196	225	155	136	171	154	119	229	193	176	143	155	142	153	213
ADJUSTED PRESSURE	0.13	0.08	0.09	0.08	0.06	0.07	0.08	0.09	0.08	0.09	0.08	0.11	0.13	0.1	0.11	0.14	0.08	0.09	0.1	0.12	0.1	0.11	0.11	0.08
ROUND DUCT SIZE	5	4	4	6	6	5	4	5	6	5	4	5	5	5	5	4	4	5	4	5	6	6	6	6
HEATING VELOCITY (ft/min)	257	321	172	270	178	338	92	206	163	257	172	396	323	455	455	321	195	360	562	441	489	489	489	489
COOLING VELOCITY (ft/min)	485	436	344	398	367	455	184	426	428	485	424	323	485	514	514	470	390	257	402	279	71	71	71	71
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	F	C	F	C	A	C	B	C	B	F	C	B	F	D	D	F	C	A	A	F	F	D	C	A

RUN #	25	26	27	28	29	30	31	32	33
ROOM NAME	BED-2	BED-3	ENS	S-ENS	FAM	L/D	BAS	BED-3	PWD
RM LOSS MBH	1.99	1.30	1.04	0.29	1.62	1.99	3.57	1.30	0.45
CFM PER RUN HEAT	53	35	28	8	44	54	96	35	12
RM GAIN MBH	2.15	2.00	1.06	0.44	1.84	1.22	0.40	2.00	0.08
CFM PER RUN COOLING	78	72	38	16	66	44	14	72	3
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17
ACTUAL DUCT LGH.	60	74	44	40	14	49	46	70	29
EQUIVALENT LENGTH	180	200	180	180	150	170	160	200	150
TOTAL EFFECTIVE LENGTH	240	274	224	220	164	219	206	270	179
ADJUSTED PRESSURE	0.07	0.06	0.08	0.08	0.1	0.08	0.08	0.06	0.1
ROUND DUCT SIZE	6	6	4	4	5	5	6	6	4
HEATING VELOCITY (ft/min)	270	178	321	92	323	396	489	178	138
COOLING VELOCITY (ft/min)	398	367	436	184	485	323	71	367	34
OUTLET GRILL SIZE	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10
TRUNK	B	A	C	B	F	A	A	A	C

SUPPLY 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	449	0.06	11.2	14	x 8 577	TRUNK G	0	0.00	0	x 8 0
TRUNK B	604	0.06	12.5	18	x 8 604	TRUNK H	0	0.00	0	x 8 0
TRUNK C	927	0.06	14.6	24	x 8 695	TRUNK I	0	0.00	0	x 8 0
TRUNK D	220	0.10	7.5	8	x 8 495	TRUNK J	0	0.00	0	x 8 0
TRUNK E	1147	0.06	15.9	30	x 8 688	TRUNK K	0	0.00	0	x 8 0
TRUNK F	357	0.09	9.3	10	x 8 643	TRUNK L	0	0.00	0	x 8 0

RETURN AIR #	1	2	3	4	5	6	7	8	9	0	0	0	0	0	0	BR
AIR VOLUME	75	75	135	115	75	75	185	400	135	0	0	0	0	0	0	234
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.	71	88	57	74	67	69	21	23	38	1	1	1	1	1	1	17
EQUIVALENT LENGTH	245	235	215	185	220	215	155	160	245	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	316	303	272	259	287	284	176	183	283	1	1	1	1	1	1	162
ADJUSTED PRESSURE	0.05	0.05	0.05	0.06	0.05	0.05	0.08	0.08	0.05	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6	6	7.5	6.7	6	6	7.5	9.9	7.5	0	0	0	0	0	0	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0	8
INLET GRILL SIZE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	14	14	30	14	0	0	0	0	0	0	24

TYPE: MOUNTAINASH 6
SITE NAME: RUSSEL GARDENS PHASE 3

LO # 88160
LOT 180

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	<u>2</u> @ 21.2 cfm	42.4 cfm
Other Bedrooms	<u>3</u> @ 10.6 cfm	31.8 cfm
Kitchen & Bathrooms	<u>6</u> @ 10.6 cfm	63.6 cfm
Other Rooms	<u>9</u> @ 10.6 cfm	95.4 cfm
Table 9.32.3.A. TOTAL		233.2 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	233.2	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	153.7	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	cfm	HVI	Sones
Location	Model				
ENS	FV-05-11VK1	50	☒	0.3	
S-ENS	FV-05-11VK1	50	☒	0.3	
ENS-2	FV-05-11VK1	50	☒	0.3	
PWD	FV-05-11VK1	50	☒	0.3	

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANE 65H		
155 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:	November-20

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

LO#: 88160

Model: MOUNTAINASH 6

Builder: GREENPARK HOMES

Date: 2020-11-13

Volume Calculation
House Volume

Level	Floor Area (ft ²)	Floor Height (ft)	Volume (ft ³)
Bsmt	1480	8	11840
First	1480	11	16280
Second	1880	9	16920
Third	0	9	0
Fourth	0	9	0
Total:			45,040.0 ft ³
Total:			1275.4 m ³

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

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

$$0.319 \times 354.28 \times 39^\circ\text{C} \times 1.2 = 5323 \text{ W}$$

$$= 18161 \text{ Btu/h}$$

6.2.6 Sensible Gain due to Air Leakage

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

$$0.114 \times 354.28 \times 7^\circ\text{C} \times 1.2 = 346 \text{ W}$$

$$= 1179 \text{ Btu/h}$$

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

$$95 \text{ CFM} \times 71^\circ\text{F} \times 1.08 \times 0.25 = 1819 \text{ Btu/h}$$

6.2.7 Sensible heat Gain due to Ventilation

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

$$95 \text{ CFM} \times 13^\circ\text{F} \times 1.08 \times 0.25 = 330 \text{ Btu/h}$$

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

$$HL_{airr} = \text{Level Factor} \times HL_{airbv} \times \{(HL_{ugr} + HL_{bgr}) \div (HL_{uglevel} + HL_{bglevel})\}$$

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 / HL _{level})
1	0.5	18,161	8,770	1.035
2	0.3		13,692	0.398
3	0.2		14,322	0.254
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:	MOUNTAINASH 6	LOT 180	BUILDER:	GREENPARK HOMES
SFQT:	3360	LO#	88160	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):	45040.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.75	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	5.0 ft
LENGTH:	55.0 ft	WIDTH:	36.0 ft
		EXPOSED PERIMETER:	182.0 ft

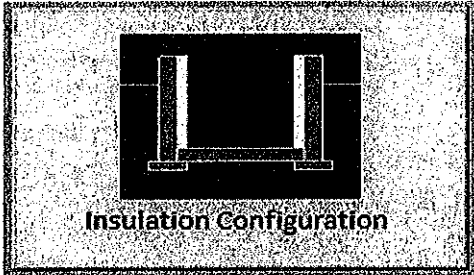
2012 OBC - COMPLIANCE PACKAGE		Compliance Package	
Component		A1	
		Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value		60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value		31	27.65
Exposed Floor Minimum RSI (R)-Value		31	29.80
Walls Above Grade Minimum RSI (R)-Value		22	17.03
Basement 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	-
Skyllights 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):	16.8	
Floor Width (m):	11.0	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.4	
Depth Below Grade (m):	1.52	
Window Area (m ²):	1.9	
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):		1782

TYPE: MOUNTAINASH 6
LO# 88160

LOT 180

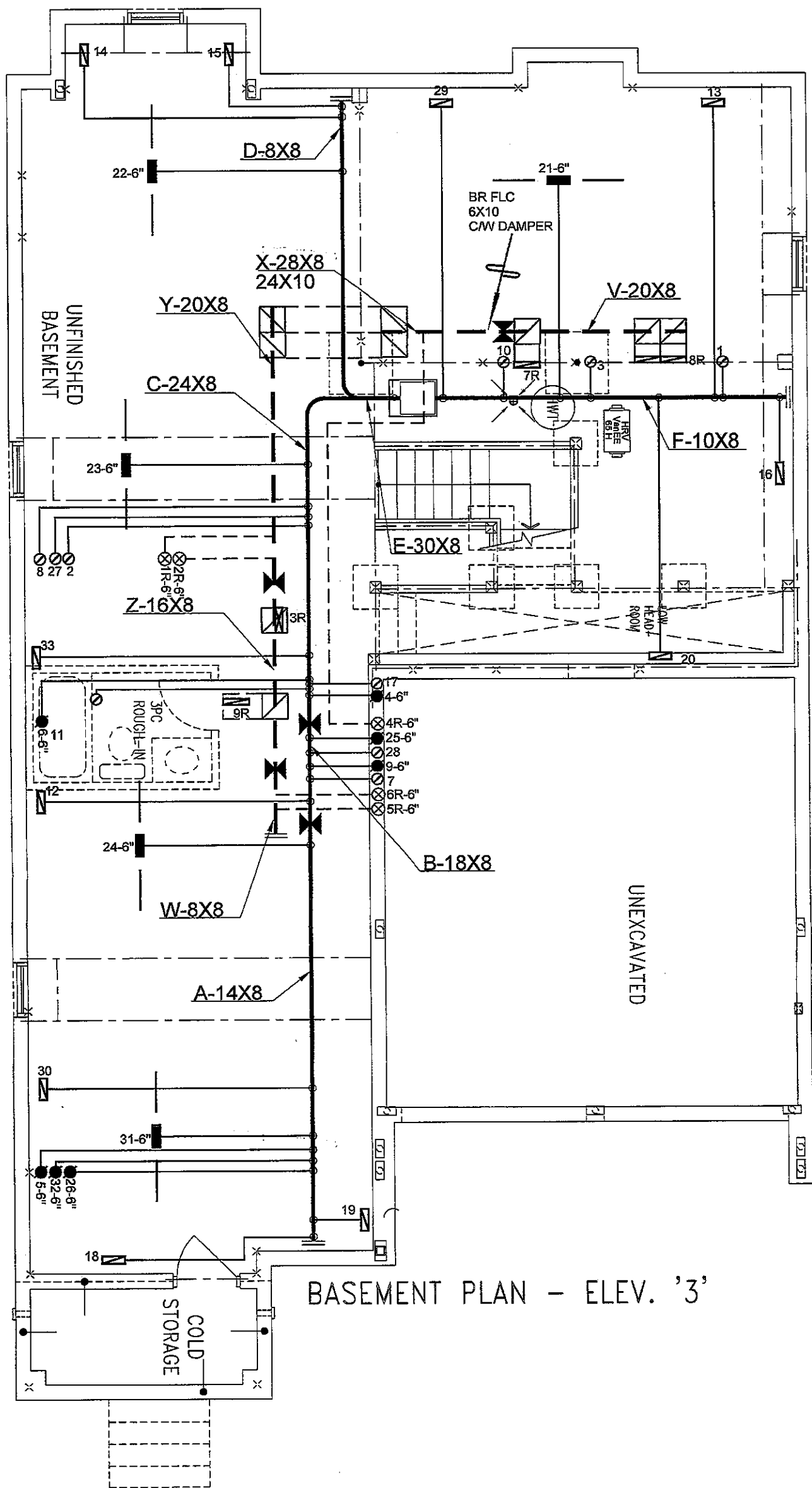
Air Infiltration Residential Load Calculator

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):	1275.4		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1700.1 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):	0.319		
Cooling Air Leakage Rate (ACH/H):	0.114		

TYPE: MOUNTAINASH 6
LO# 88160

LOT 180



BASEMENT PLAN - ELEV. '3'

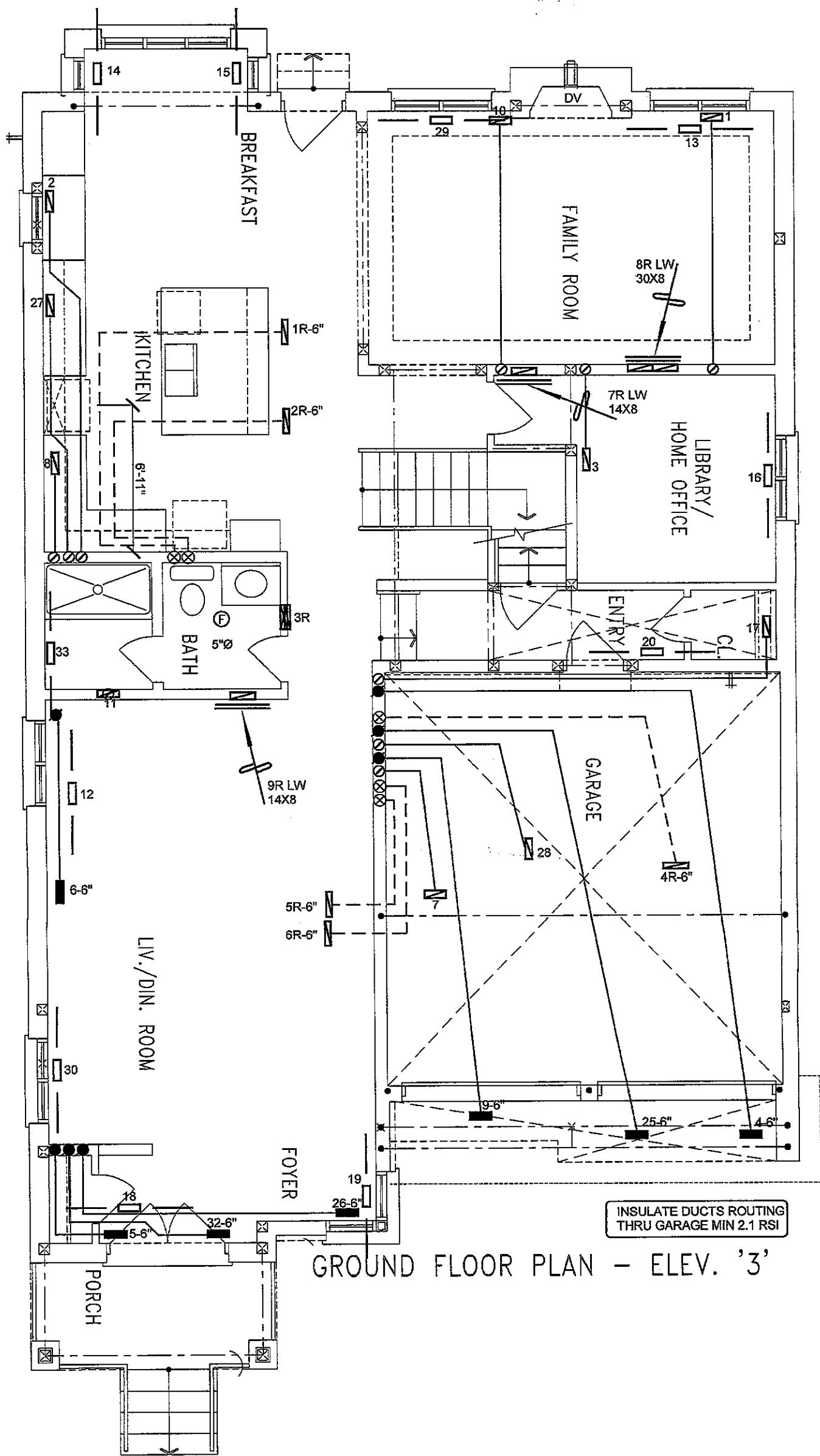
LOT 180
CSA-F280-12
PACKAGE A1

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
	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		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		HEAT LOSS 57337 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		17	6	4				
		INPUT 80 MBTU/H	1ST FLOOR		11	3	2				
LOT 180 MOUNTAINASH 6 3360 sqft		OUTPUT 76.8 MBTU/H	BASEMENT		5	1	0	Date	NOV/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"	
		FAN SPEED 1504 cfm @ 0.5" w.c.							BCIN# 19669		
								LO#	88160		



GROUND FLOOR PLAN - ELEV. '3'

INSULATE DUCTS ROUTING THRU GARAGE MIN 2.1 RSI

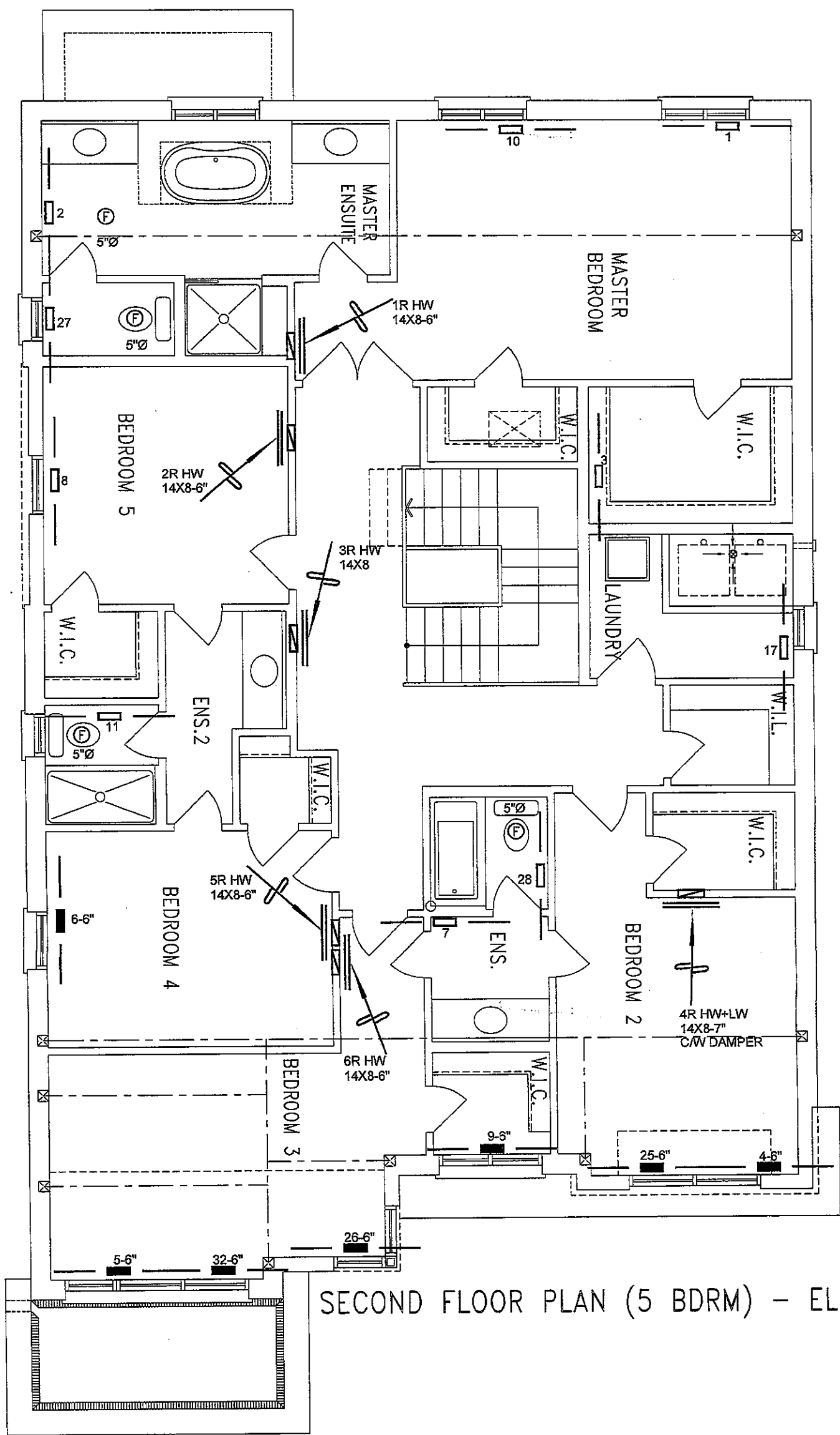
LOT 180
CSA-F280-12
PACKAGE A1

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.	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	Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			Date NOV/2020	Scale 3/16" = 1'-0"
LOT 180 MOUNTAINASH 6 3360 sqft		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.	BCIN# 19669	
			LO#	88160



SECOND FLOOR PLAN (5 BDRM) - ELEV. '3'

LOT 180
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.
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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.
	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 180
MOUNTAINASH 6 3360 sqft

HVACDESIGNS LTD.
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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**
Date
NOV/2020
Scale
3/16" = 1'-0"
BCIN# 19669
LO# 88160