

SITE NAME: RUSSEL GARDENS PHASE 3

BUILDER: GREENPARK HOMES

TYPE: MOUNTAINASH 2

GFA: 2848

DATE: May-20

LO# 85963

WINTER NATURAL AIR CHANGE RATE 0.338

SUMMER NATURAL AIR CHANGE RATE 0.121

HEAT LOSS AT °F. 71

HEAT GAIN AT °F. 13

CSA-F280-12

SB-12 PACKAGE A1

ROOM USE	MBR	ENS	BED-2	BED-3	BED-4	ENS-2	ENS-3
EXP. WALL	40	23	13	17	42	9	21
CLG. HT.	9	9	9	9	9	9	9
FACTORS							
GRS.WALL AREA	380	207	117	163	378	81	189
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN
NORTH	19.8 16.0 0 0 0	7 138 112	16 316 256	0 0 0	12 237 192	0 0 0	0 0 0
EAST	19.8 41.6 0 0 0	0 0 0	0 0 0	42 830 1745	60 1186 2493	0 0 0	23 466 956
SOUTH	19.8 24.9 11 217 274	0 0 0	0 0 0	0 0 0	0 0 0	7 138 174	0 0 0
WEST	19.8 41.6 32 633 1330	14 277 582	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 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 0.8 317 1314 238	186 771 140	101 419 76	111 460 83	306 1269 230	74 307 56	166 688 125
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 0.6 503 600 296	132 157 78	220 262 129	203 242 119	227 271 133	111 132 65	90 107 53
NO ATTIC EXPOSED CLG	2.6 1.3 0 0 0	0 0 0	0 0 0	20 51 26	45 115 57	0 0 0	0 0 0
EXPOSED FLOOR	2.4 0.4 0 0 0	0 0 0	0 0 0	0 0 0	187 443 80	0 0 0	80 190 34
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0
SUBTOTAL HT LOSS	2764	1344	997	1683	3620	677	1440
SUB TOTAL HT GAIN		2137	461	1973	3185	296	1168
LEVEL FACTOR / MULTIPLIER	0.20 0.26	0.20 0.26	0.20 0.26	0.20 0.26	0.20 0.26	0.20 0.26	0.20 0.26
AIR CHANGE HEAT LOSS	720	369	260	412	917	160	375
AIR CHANGE HEAT GAIN		147	32	135	218	20	80
DUCT LOSS	0	0	0	0	0	0	181
DUCT GAIN	0	0	0	0	423	0	125
HEAT GAIN PEOPLE	240	2	480	0	240	0	0
HEAT GAIN APPLIANCES/LIGHTS		585	585	585	585	0	0
TOTAL HT LOSS BTU/H	3484	1693	1257	1986	4881	728	1996
TOTAL HT GAIN x 1.3 BTU/H	4354	1266	1712	3813	6047	410	1784

ROOM USE	LV/DIN	K/B	FAM	LND	FOY	WOD	BAS
EXP. WALL	40	36	46	27	26	46	172
CLG. HT.	10	10	10	11	10	8	8
FACTORS							
GRS.WALL AREA	400	360	460	297	258	368	998
GLAZING	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 0	8 168 128	0 0 0	0 0 0	3 59 46
EAST	19.8 41.6 14 277 582	0 0 0	0 0 0	0 0 0	6 119 249	0 0 0	0 0 0
SOUTH	19.8 24.9 34 672 847	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	6 119 149
WEST	19.8 41.6 0 0 0	70 1384 2909	40 791 1662	0 0 0	0 0 0	12 237 499	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 0 0 0	0 0 0	0 0 0	20 469 85	40 938 170	0 0 0	20 469 85
NET EXPOSED WALL	4.1 0.8 352 1458 265	290 1202 218	410 1700 308	269 1115 202	204 846 163	0 0 0	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	264 883 160	378 1284 229
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 1.3 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	0	5688
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0
SUBTOTAL HT LOSS	2408	2586	2490	1742	1983	1120	7598
SUB TOTAL HT GAIN		3127	1970	415	573	659	511
LEVEL FACTOR / MULTIPLIER	0.30 0.43	0.30 0.43	0.30 0.43	0.30 0.43	0.30 0.43	0.50 0.51	0.50 0.51
AIR CHANGE HEAT LOSS	1033	1110	1069	748	816	7960	80
AIR CHANGE HEAT GAIN		214	135	28	39	0	0
DUCT LOSS	0	0	0	0	0	0	0
DUCT GAIN	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	240	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS		585	585	585	585	0	0
TOTAL HT LOSS BTU/H	3442	3696	3559	2490	2719	1120	15559
TOTAL HT GAIN x 1.3 BTU/H	3112	5104	3487	1337	796	859	1530

TOTAL HEAT GAIN BTU/H:

35892

TONS: 2.99

LOSS DUE TO VENTILATION LOAD BTU/H: 1515

STRUCTURAL HEAT LOSS: 48819

TOTAL COMBINED HEAT LOSS BTU/H: 60134

Michael O'Rourke

SITE NAME: RUSSEL GARDENS PHASE 3
BUILDER: GREENPARK HOMES

TYPE: MOUNTAINASH 2

DATE: May-20

GFA: 2848 LO# 85963

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 48,619 TOTAL HEAT GAIN 35,617
AIR FLOW RATE CFM 23.26 AIR FLOW RATE CFM 31.75

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

#GOODMAN
GMEC960803BNA

AFUE = 96 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = 57,600

RUN COUNT	4th	3rd	2nd	1st	Bgs
S/A	0	0	11	6	4
R/A	0	0	5	2	1

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

FAN SPEED 60
LOW
MEDLOW 928
MEDIUM 1017
HIGH 1131

DESIGN CFM = 1131
CFM @ .5" E.S.P.

All S/A diffusers 4"x10" unless noted otherwise on layout.
All S/A runs 5"Ø unless noted otherwise on layout.

TEMPERATURE RISE 47 °F

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	14	15	16	17	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-3	BED-2	BED-3	BED-4	ENS-2	BED-4	ENS-3	MBR	ENS-3	LV/DIN	K/B	K/B	FAM	LND	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.74	1.69	1.00	1.26	1.00	2.44	0.73	2.44	1.00	1.74	1.00	3.44	1.85	1.85	3.56	2.49	2.72	4.17	4.17	4.17	4.17
CFM PER RUN HEAT	41	39	23	29	23	57	17	57	23	41	23	80	43	43	83	58	63	97	97	97	97
RM GAIN MBH.	2.18	1.27	1.91	1.71	1.91	3.02	0.41	3.02	0.89	2.18	0.89	3.11	2.55	2.55	3.50	1.34	0.80	0.60	0.60	0.60	0.60
CFM PER RUN COOLING	69	40	61	54	61	96	13	96	28	69	28	99	81	81	111	42	25	19	19	19	19
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.15	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	31	55	55	44	48	64	45	60	48	43	60	40	28	38	17	40	43	30	10	34	47
EQUIVALENT LENGTH	150	130	130	130	120	170	130	180	170	200	160	140	140	110	110	90	100	130	80	130	110
TOTAL EFFECTIVE LENGTH	181	185	185	174	168	234	175	240	218	243	220	180	168	148	127	130	143	160	90	164	157
ADJUSTED PRESSURE	0.1	0.09	0.09	0.1	0.1	0.07	0.1	0.07	0.08	0.07	0.08	0.09	0.1	0.11	0.12	0.13	0.12	0.1	0.18	0.1	0.1
ROUND DUCT SIZE	6	4	5	5	5	6	4	6	4	6	4	6	5	5	6	5	5	6	6	6	6
HEATING VELOCITY (ft/min)	209	447	169	213	169	291	195	291	264	209	264	408	316	316	423	426	463	495	495	495	495
COOLING VELOCITY (ft/min)	352	459	448	398	448	489	149	489	321	352	321	505	595	595	566	308	184	97	97	97	97
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	3X10	4X10	3X10	3X10	4X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	C	B	C	B	A	B	A	B	C	B	A	C	C	D	C	A	C	D	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
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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	354	0.07	9.8	12	x	8	531	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	580	0.07	11.7	16	x	8	630	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	350	0.07	9.8	12	x	8	525	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	1131	0.07	15.2	26	x	8	783	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	150	0.05	7.8	8	x	8	338
TRUNK X	1131	0.05	16.5	32	x	8	636
TRUNK Y	375	0.05	10.9	14	x	8	482
TRUNK Z	575	0.05	12.8	20	x	8	518
DROP	1131	0.05	16.5	24	x	10	679

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	14	15	16	17	19	21	22	23	24
AIR VOLUME	135	85	85	75	155	340	75	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
ACTUAL DUCT LGH.	52	54	57	66	29	38	58	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	185	175	195	215	190	235	220	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	237	229	252	281	219	273	278	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.06	0.06	0.06	0.05	0.07	0.05	0.05	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	7.1	6	6	6	7.2	10.5	6	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
INLET GRILL SIZE	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	14	30	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: MOUNTAINASH 2
SITE NAME: RUSSEL GARDENS PHASE 3

LO # 85963

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	5 @ 10.6 cfm	53.0 cfm
Table 9.32.3.A.		TOTAL 180.2 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	180.2	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	100.7	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 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

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
155 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:	May-20

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 85963		Model: MOUNTAINASH 2		Builder: GREENPARK HOMES																																																								
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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>1297</td><td>8</td><td>10376</td></tr> <tr><td>First</td><td>1297</td><td>10</td><td>12970</td></tr> <tr><td>Second</td><td>1551</td><td>9</td><td>13959</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>37,305.0 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>1056.4 m³</td></tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1297	8	10376	First	1297	10	12970	Second	1551	9	13959	Third	0	9	0	Fourth	0	9	0	Total:			37,305.0 ft³	Total:			1056.4 m³	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>WINTER NATURAL AIR CHANGE RATE</td> <td>0.338</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.121</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="5">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>22</td> <td>-17</td> <td>39</td> <td>71</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>31</td> <td>7</td> <td>13</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.338	SUMMER NATURAL AIR CHANGE RATE	0.121	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-17	39	71	Summer DTDc	24	31	7	13
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																									
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5.2.3.1 Heat Loss due to Air Leakage $HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.338 x 293.43 x 39 °C x 1.2 = 4666 W = 15920 Btu/h			6.2.6 Sensible Gain due to Air Leakage $HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.121 x 293.43 x 7 °C x 1.2 = 303 W = 1034 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation $HL_{vatrb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 71 °F x 1.08 x 0.25 = 1515 Btu/h			6.2.7 Sensible heat Gain due to Ventilation $HL_{vatrb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 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)																																																												
$HL_{airr} = \text{Level Factor} \times HL_{airbv} \times \{ (HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel}) \}$																																																												
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{level})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																								
1	0.5	15,920	8,718	0.913																																																								
2	0.3		11,129	0.429																																																								
3	0.2		12,226	0.260																																																								
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 2**BUILDER:** GREENPARK HOMES**SFQT:** 2848**LO#** 85963**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):	37305.0	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: 50.0 ft	WIDTH: 36.0 ft	EXPOSED PERIMETER:	172.0 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	-

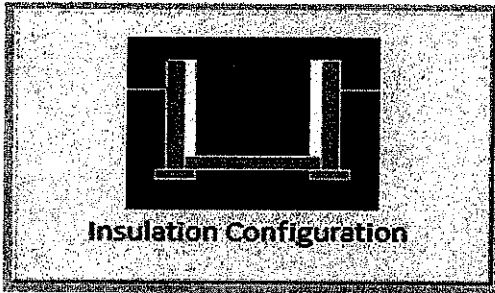
INDIVIDUAL BCIN: 19669

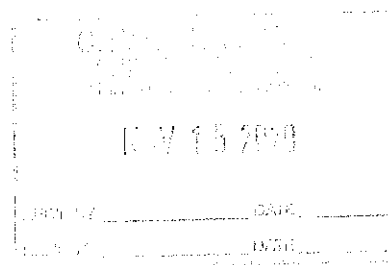
MICHAEL O'ROURKE

Michael O'Rourke

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

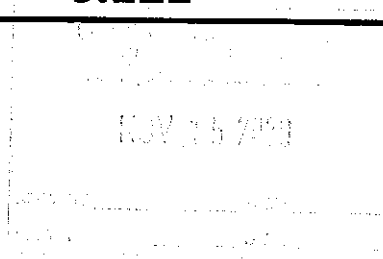
Weather Station Description		
Province:	Ontario	
Region:	Hamilton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.2	 Insulation Configuration
Floor Width (m):	11.0	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.4	
Depth Below Grade (m):	1.52	
Window Area (m ²):	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):	1667	

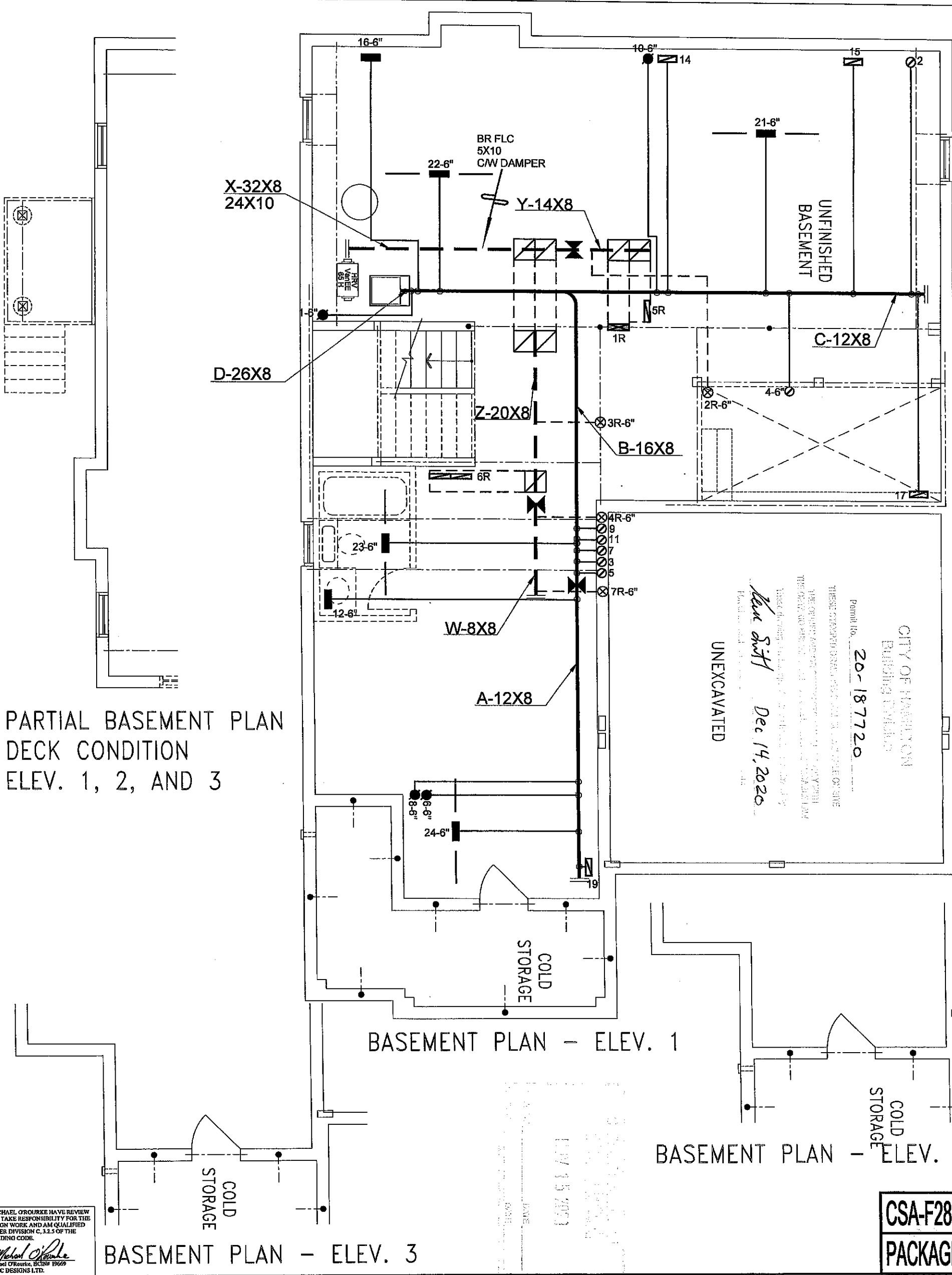
TYPE: MOUNTAINASH 2
LO# 85963

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):	7.62		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	1056.4		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa. 3.57	1408.2 cm ² ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply 37.5	Total Exhaust 37.5	
Flue Size			
Flue #:	#1	#2	#3 #4
Diameter (mm):	0	0	0 0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.338		
Cooling Air Leakage Rate (ACH/H):	0.121		

TYPE: MOUNTAINASH 2
LO# 85963



PARTIAL BASEMENT PLAN
DECK CONDITION
ELEV. 1, 2, AND 3

BASEMENT PLAN - ELEV. 1

BASEMENT PLAN - ELEV. 2

BASEMENT PLAN - ELEV. 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.

CSA-F280-12
PACKAGE A1

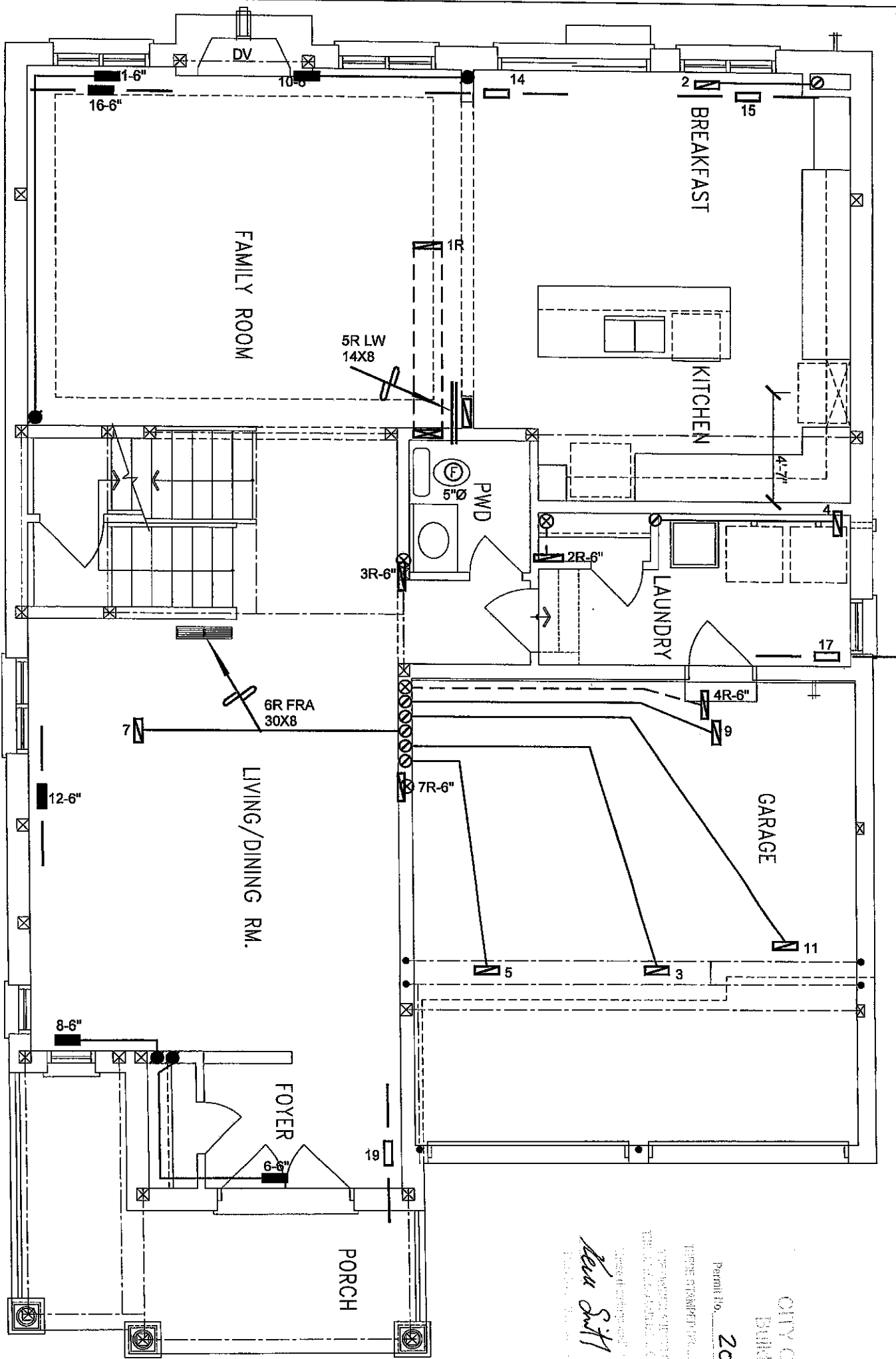
HVAC LEGEND							3.
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	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		HVACDESIGNS 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 50134 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title BASEMENT HEATING LAYOUT
Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			MAKE GOODMAN		3RD FLOOR			
			MODEL GMEC960603BNA		2ND FLOOR			
			INPUT 60 MBTU/H		1ST FLOOR			
			OUTPUT 57.6 MBTU/H		BASEMENT			
MOUNTAINASH 2 2848 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 APRIL/2020	
		FAN SPEED 1131 cfm @ 0.5" w.c.					Scale 3/16" = 1'-0"	
							BCIN# 19669	
							LO# 85963	

GROUND FLOOR PLAN - ELEV. 2

GROUND FLOOR PLAN - ELEV. 3



GROUND FLOOR PLAN - ELEV. 1

CITY OF HAMILTON
Building Division
Permit No. 20-187720
Dec 14, 2020

I MICHAEL O'BROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.5 OF THE BUILDING CODE.
Michael O'Brourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

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

Project Name

**RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO**

MOUNTAINASH 2 2848 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@hvacdsgns.ca
Web: www.hvacdsgns.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**

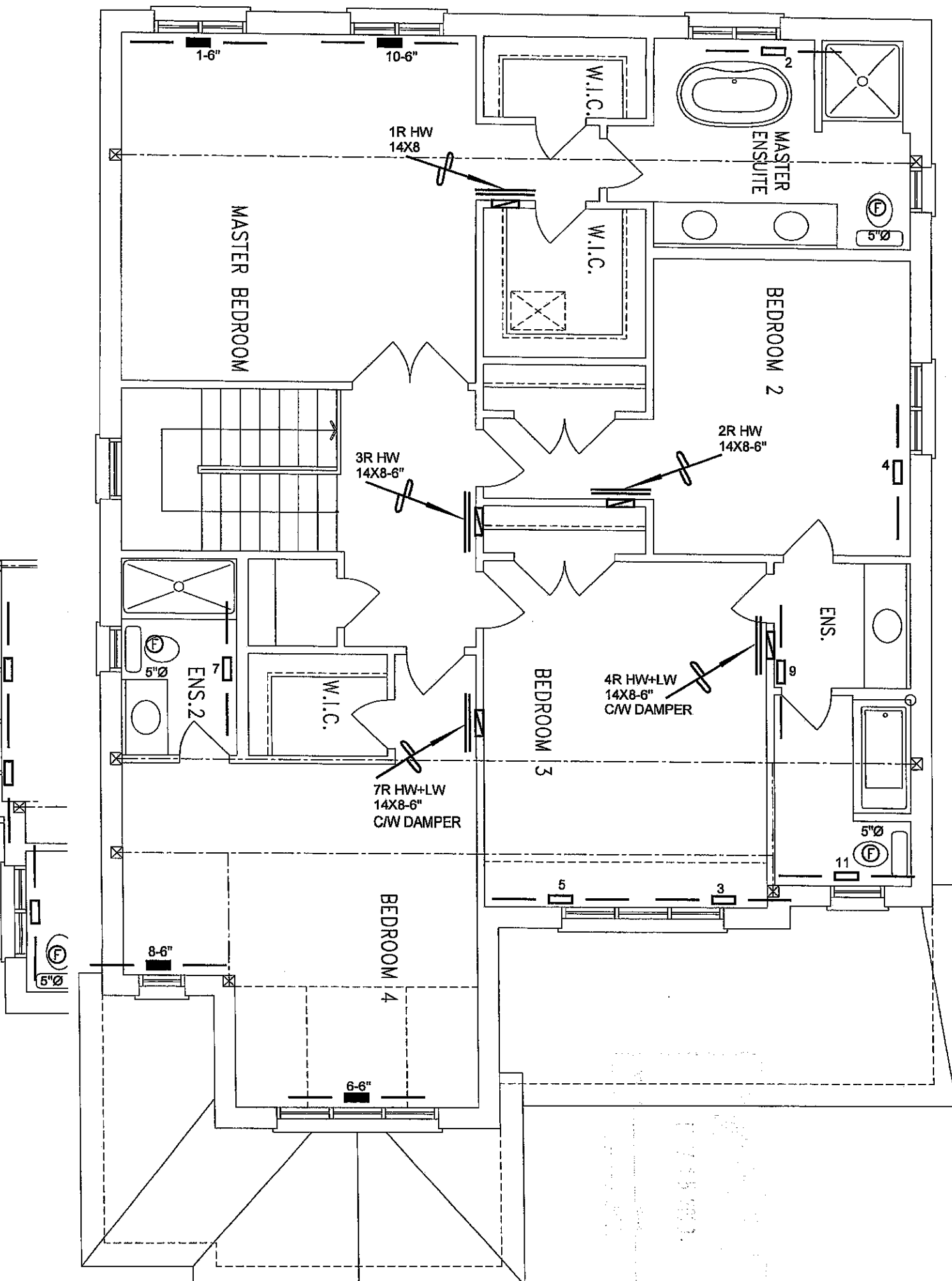
Date **APRIL/2020**

Scale **3/16" = 1'-0"**

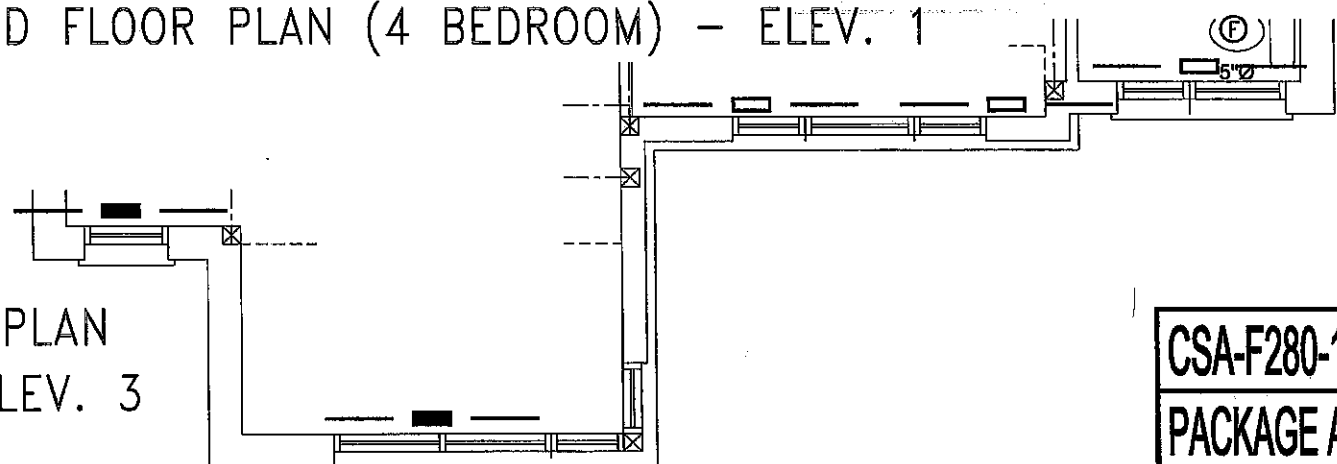
BCIN# 19669

LO# **85963**

THESE SCHEDULE DRAWINGS SHALL BE A PART OF THE
CONTRACT DOCUMENTS. CONTRACT DOCUMENTS SHALL BE
THE BASIS FOR THE DESIGN AND CONSTRUCTION OF THE
PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR
OBTAINING ALL NECESSARY PERMITS AND APPROVALS
FOR THE PROJECT. THE CONTRACTOR SHALL BE
RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF
THE PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE
FOR THE DESIGN AND CONSTRUCTION OF THE PROJECT.
Dec 14, 2020



SECOND FLOOR PLAN (4 BEDROOM) - ELEV. 1



SECOND FLOOR PLAN
(4 BEDROOM)-ELEV. 3

CSA-F280-12
PACKAGE A1

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		8" 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@hvacdsgns.ca Web: www.hvacdsgns.ca Specializing in Residential Mechanical Design Services	Sheet Title SECOND FLOOR HEATING LAYOUT	
Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			Date APRIL/2020 Scale 3/16" = 1'-0" BCIN# 19669	
MOUNTAINASH 2 2848 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.		
		LO# 85963		