

SITE NAME: ZADORRA ESTATES INC										DATE: Jul-22		WINTER NATURAL AIR CHANGE RATE 0.312		HEAT LOSS AT °F. 74		CSA F380-12	
BUILDER: GREENPARK HOMES										LO# 97935		SUMMER NATURAL AIR CHANGE RATE 0.086		HEAT GAIN AT °F. 11		SR-12 PACKAGE A1	
ROOM USE		MBR		ENS		WIC		BED-2		BED-3		BED-4		BATH		ENS-2	
EXP. WALL		38		25		6		14		37		16		9		15	
CLG. HT.		9		9		9		11		10		9		9		9	
FACTORS																	
GRS.WALL AREA		342		225		54		154		370		144		81		135	
GLAZING		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN	
NORTH		20.8	15.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EAST		20.8	41.0	0	0	0	0	26	540	1067	31	644	1272	0	0	10	208
SOUTH		20.8	24.4	0	0	11	229	268	0	0	0	16	332	390	9	187	220
WEST		20.8	41.0	32	665	1314	14	291	575	0	0	0	0	0	0	0	0
SKYL.T.		36.4	100.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS		19.6	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL		4.4	0.6	310	1351	200	200	871	129	54	235	35	128	558	83	125	545
NET EXPOSED BSMT WALL ABOVE GR		3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG		1.3	0.6	385	482	215	156	195	87	96	120	53	182	228	101	271	340
NO ATTIC EXPOSED CLG		2.7	1.2	0	0	0	0	0	0	60	161	72	32	86	38	0	0
EXPOSED FLOOR		2.5	0.4	0	0	0	0	0	0	242	603	89	0	0	0	61	152
BASEMENT/CRAWL HEAT LOSS																	
SLAB ON GRADE HEAT LOSS																	
SUBTOTAL HT LOSS				2498		1586		356		2089		2547		1195		981	
SUB TOTAL HT GAIN					1728		1059		88		1412		1681		327		548
LEVEL FACTOR / MULTIPLIER		0.20	0.26			0.20	0.26		0.20	0.26		0.20	0.26		0.20	0.26	
AIR CHANGE HEAT LOSS				649		412		92		543		662		311		166	
AIR CHANGE HEAT GAIN					104		64		5		85		101		36		20
DUCT LOSS				0		0		0		263		0		0		0	
DUCT GAIN					0		0		0		272		0		0		58
HEAT GAIN PEOPLE		240		2	480	0	0	0	0	1	240	1	240	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS					983		0		0		983		983		0		0
TOTAL HT LOSS BTU/H				3147		1999		448		2896		3208		1505		804	
TOTAL HT GAIN x 1.3 BTU/H				4283		1459		122		3889		3906		2428		451	

NOV 03 2023
MHP 23019

ROOM USE		LV/DN		OFF		KT/FM		WIC-2		LAUN		MUD		FOY		BAS	
EXP. WALL		21		28		74		11		15		29		21		182	
CLG. HT.		10		10		10		11		9		12		11		9	
FACTORS																	
GRS.WALL AREA		210		280		740		121		135		348		231		1092	
GLAZING		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN	
NORTH		20.8	15.5	0	0	0	0	0	0	23	478	356	0	0	0	0	0
EAST		20.8	41.0	0	0	0	0	10	208	410	0	0	0	23	478	944	0
SOUTH		20.8	24.4	22	457	537	20	416	488	0	0	0	0	0	0	0	208
WEST		20.8	41.0	0	0	0	0	78	1621	3202	0	0	0	0	0	0	3
SKYL.T.		36.4	100.7	0	0	0	0	0	0	0	0	0	0	0	0	0	62
DOORS		19.6	2.9	0	0	0	0	0	0	0	0	20	392	58	25	489	73
NET EXPOSED WALL		4.4	0.6	188	819	121	260	1133	168	662	2884	428	111	484	72	328	1429
NET EXPOSED BSMT WALL ABOVE GR		3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG		1.3	0.6	0	0	0	0	0	0	0	71	89	40	0	0	0	0
NO ATTIC EXPOSED CLG		2.7	1.2	0	0	0	0	10	27	12	0	0	0	18	48	21	0
EXPOSED FLOOR		2.5	0.4	0	0	0	0	0	0	0	71	177	26	0	0	0	0
BASEMENT/CRAWL HEAT LOSS																	
SLAB ON GRADE HEAT LOSS																	
SUBTOTAL HT LOSS				1276		1548		4532		691		1232		1869		1765	
SUB TOTAL HT GAIN					658		656		3641		482		494		291		1135
LEVEL FACTOR / MULTIPLIER		0.30	0.44			0.30	0.44		0.30	0.44		0.30	0.44		0.30	0.44	
AIR CHANGE HEAT LOSS				559		678		1985		303		320		819		773	
AIR CHANGE HEAT GAIN					39		39		218		29		30		17		68
DUCT LOSS				0		0		0		0		155		0		0	
DUCT GAIN					0		0		0		0		151		0		0
HEAT GAIN PEOPLE		240		0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS					983		983		983		0		983		0		983
TOTAL HT LOSS BTU/H				1835		2226		6516		994		1707		2688		2537	
TOTAL HT GAIN x 1.3 BTU/H				2185		2181		6295		664		2154		402		1564	

TOTAL HEAT GAIN BTU/H: 35306 TONS: 2.94 LOSS DUE TO VENTILATION LOAD BTU/H: 1593 STRUCTURAL HEAT LOSS: 51110 TOTAL COMBINED HEAT LOSS BTU/H: 52702

SITE NAME: ZADORRA ESTATES INC
BUILDER: GREENPARK HOMES

TYPE: PENROSE 2

DATE: Jul-22

GFA: 3045 LO# 97935

HEATING CFM 1131	COOLING CFM 1131	furnace pressure 0.6	#GOODMAN	AFUE = 96
TOTAL HEAT LOSS 51,110	TOTAL HEAT GAIN 35,070	furnace filter 0.05	GMEC960603BNA 60	INPUT (BTU/H) = 60
AIR FLOW RATE CFM 22.13	AIR FLOW RATE CFM 32.25	a/c coil pressure 0.2	FAN SPEED LOW	OUTPUT (BTU/H) = 60
		available pressure for s/a & r/a 0.35	MEDLOW	DESIGN CFM @
			MEDIUM 928	CFM @
			MEDIUM HIGH 1017	TEMPERATURE RISE
			HIGH 1131	
		plenum pressure s/a 0.18		
		max s/a dif press. loss 0.02		
		min adjusted pressure s/a 0.16		
		r/a pressure 0.17		
		r/a grille press. Loss 0.02		
		adjusted pressure r/a 0.15		

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
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-2	BED-3	MBR	ENS-2	LV/DN	OFF	KT/FM	KT/FM	WIC-2	LAUN	MUD	FOY	KT/FM	BAS	BAS	BAS
RM LOSS MBH.	1.57	2.00	0.45	1.45	1.60	1.51	0.80	1.45	1.60	1.57	1.36	1.84	2.23	2.17	2.17	0.99	1.71	2.69	2.54	2.17	4.31	4.31	4.31
CFM PER RUN HEAT	35	44	10	32	36	33	18	32	36	35	30	41	49	48	48	22	38	59	56	48	95	95	95
RM GAIN MBH.	2.14	1.46	0.12	1.94	1.95	2.43	0.45	1.94	1.95	2.14	0.83	2.18	2.18	2.10	2.10	0.66	2.15	0.40	1.56	2.10	0.56	0.56	0.56
CFM PER RUN COOLING	69	47	4	63	63	78	15	63	63	69	27	70	70	68	68	21	69	13	50	68	18	18	18
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	0.16	0.16	0.16
ACTUAL DUCT LGH.	62	33	51	41	43	23	34	47	52	76	51	4	18	37	45	26	16	62	46	65	30	49	10
EQUIVALENT LENGTH	170	160	160	170	160	160	150	160	150	130	200	190	140	150	200	160	140	170	140	180	190	180	190
TOTAL EFFECTIVE LENGTH	232	193	211	211	203	183	184	207	202	206	251	194	158	187	245	186	156	232	186	245	210	239	190
ADJUSTED PRESSURE	0.07	0.09	0.08	0.08	0.08	0.09	0.09	0.08	0.09	0.08	0.07	0.09	0.11	0.09	0.07	0.09	0.11	0.07	0.09	0.07	0.08	0.07	0.09
ROUND DUCT SIZE	6	5	4	5	5	6	4	5	5	6	4	6	5	5	5	4	5	5	5	6	6	6	6
HEATING VELOCITY (ft/min)	178	323	115	235	264	168	207	235	264	178	344	209	360	352	352	252	279	433	411	245	484	484	484
COOLING VELOCITY (ft/min)	352	345	46	463	463	398	172	463	463	352	310	357	514	499	499	241	507	95	367	347	92	92	92
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	D	D	A	A	D	B	A	A	C	A	B	B	D	C	A	B	C	A	C	D	C	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
1	MBR	1.57	35	2.14	69	0.17	62	170	232	0.07	6	178	352	4X10	C
2	ENS	2.00	44	1.46	47	0.17	33	160	193	0.09	5	323	345	3X10	D
3	WIC	0.45	10	0.12	4	0.17	51	160	211	0.08	4	115	46	3X10	D
4	BED-2	1.45	32	1.94	63	0.17	41	170	211	0.08	5	235	463	3X10	A
5	BED-3	1.60	36	1.95	63	0.17	43	160	203	0.08	5	264	463	3X10	A
6	BED-4	1.51	33	2.43	78	0.17	23	160	183	0.09	6	168	398	4X10	D
7	BATH	0.80	18	0.45	15	0.17	34	150	184	0.09	4	207	172	3X10	B
8	BED-2	1.45	32	1.94	63	0.17	47	160	207	0.08	5	235	463	3X10	A
9	BED-3	1.60	36	1.95	63	0.17	52	150	202	0.09	5	264	463	3X10	A
10	MBR	1.57	35	2.14	69	0.17	76	130	206	0.08	6	178	352	4X10	C
11	ENS-2	1.36	30	0.83	27	0.17	51	200	251	0.07	4	344	310	3X10	A
12	LV/DN	1.84	41	2.18	70	0.17	4	190	194	0.09	6	209	357	4X10	B
13	OFF	2.23	49	2.18	70	0.17	18	140	158	0.11	5	360	514	3X10	B
14	KT/FM	2.17	48	2.10	68	0.17	37	150	187	0.09	5	352	499	3X10	D
15	KT/FM	2.17	48	2.10	68	0.17	45	200	245	0.07	5	352	499	3X10	C
16	WIC-2	0.99	22	0.66	21	0.17	26	160	186	0.09	4	252	241	3X10	A
17	LAUN	1.71	38	2.15	69	0.17	16	140	156	0.11	5	279	507	3X10	B
18	MUD	2.69	59	0.40	13	0.17	62	170	232	0.07	5	433	95	3X10	C
19	FOY	2.54	56	1.56	50	0.17	46	140	186	0.09	5	411	367	3X10	A
20	KT/FM	2.17	48	2.10	68	0.17	65	180	245	0.07	6	245	347	4X10	C
21	BAS	4.31	95	0.56	18	0.16	30	190	210	0.08	6	484	92	4X10	D
22	BAS	4.31	95	0.56	18	0.16	49	180	239	0.07	6	484	92	4X10	C
23	BAS	4.31	95	0.56	18	0.16	10	190	190	0.09	6	484	92	4X10	A

SUPPLY AIR TRUNK SIZE	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	RETURN AIR TRUNK SIZE	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	339	0.07	9.7	12	8	509	0	0.00	0	0	TRUNK G	0	0.00	0	0	8
TRUNK B	580	0.07	11.8	16	8	653	0	0.00	0	0	TRUNK H	0	0.00	0	0	8
TRUNK C	320	0.07	9.5	10	8	576	0	0.00	0	0	TRUNK I	0	0.00	0	0	8
TRUNK D	550	0.07	11.6	16	8	619	0	0.00	0	0	TRUNK J	0	0.00	0	0	8
TRUNK E	0	0.00	0	0	8	0	0	0.00	0	0	TRUNK K	0	0.00	0	0	8
TRUNK F	0	0.00	0	0	8	0	0	0.00	0	0	TRUNK L	0	0.00	0	0	8

RETURN AIR #	1	2	3	4	5	6	7											BR
AIR VOLUME	135	155	95	85	135	185	155	0	0	0	0	0	0	0	0	186		
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.	55	47	55	56	41	20	23	1	1	1	1	1	1	1	1	14		
EQUIVALENT LENGTH	225	185	165	175	230	165	220	0	0	0	0	0	0	0	0	135		
TOTAL EFFECTIVE LH	280	232	220	231	271	185	243	1	1	1	1	1	1	1	1	149		
ADJUSTED PRESSURE	0.05	0.06	0.07	0.06	0.05	0.08	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10		
ROUND DUCT SIZE	7.5	7.5	6	6	7.5	7.5	7.5	0	0	0	0	0	0	0	0	7.1		
INLET GRILL SIZE	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	8		
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
INLET GRILL SIZE	14	14	14	14	14	14	14	0	0	0	0	0	0	0	0	14		

TRUNK V	0	0.05	0	0	x	8	0
TRUNK W	0	0.05	0	0	x	8	0
TRUNK X	706	0.05	13.8	22	x	8	578
TRUNK Y	425	0.05	11.5	16	x	8	478
TRUNK Z	0	0.05	0	0	x	8	0
DROP	1131	0.05	16.5	24	x	10	679

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

MHP 23019

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 V150H Location: BSMT

79.5 cfm ☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM	ΔT °F	FACTOR	% LOSS
79.5 CFM	X 74 F	X 1.08	X 0.25

SUPPLEMENTAL FANS BY INSTALLING CONTRACTOR

Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	✓	3.5
BATH	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-2	BY INSTALLING CONTRACTOR	50	✓	3.5
PWD	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE V150H

150 cfm high 35 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: *Michael O'Rourke*

HRAI # 001820

Date: July-22

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 97935		Model: PENROSE 2		Builder: GREENPARK HOMES																																																								
				Date: 7/5/2022																																																								
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>1378</td> <td>9</td> <td>12402</td> </tr> <tr> <td>First</td> <td>1378</td> <td>10</td> <td>13780</td> </tr> <tr> <td>Second</td> <td>1667</td> <td>9</td> <td>15003</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>41,185.0 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>1166.2 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1378	9	12402	First	1378	10	13780	Second	1667	9	15003	Third	0	9	0	Fourth	0	9	0	Total:			41,185.0 ft³	Total:			1166.2 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>WINTER NATURAL AIR CHANGE RATE</td> <td>0.312</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.086</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <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> </thead> <tbody> <tr> <td>Winter DTDh</td> <td>22</td> <td>-19</td> <td>41</td> <td>74</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>30</td> <td>6</td> <td>11</td> </tr> </tbody> </table>		WINTER NATURAL AIR CHANGE RATE	0.312	SUMMER NATURAL AIR CHANGE RATE	0.086	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-19	41	74	Summer DTDc	24	30	6	11
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																									
Bsmt	1378	9	12402																																																									
First	1378	10	13780																																																									
Second	1667	9	15003																																																									
Third	0	9	0																																																									
Fourth	0	9	0																																																									
Total:			41,185.0 ft³																																																									
Total:			1166.2 m³																																																									
WINTER NATURAL AIR CHANGE RATE	0.312																																																											
SUMMER NATURAL AIR CHANGE RATE	0.086																																																											
Design Temperature Difference																																																												
	Tin °C	Tout °C	ΔT °C	ΔT °F																																																								
Winter DTDh	22	-19	41	74																																																								
Summer DTDc	24	30	6	11																																																								
5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ <p>0.312 x 323.95 x 41 °C x 1.2 = 4998 W</p> <p>= 17053 Btu/h</p>			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ <p>= 0.086 x 323.95 x 6 °C x 1.2 = 204 W</p> <p>= 695 Btu/h</p>																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>80 CFM x 74 °F x 1.08 x 0.25 = 1593 Btu/h</p>			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>80 CFM x 11 °F x 1.08 x 0.25 = 236 Btu/h</p>																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HLairve Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{clevel})</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.5</td> <td rowspan="5">17,053</td> <td>8,712</td> <td>0.979</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>11,681</td> <td>0.438</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>13,121</td> <td>0.260</td> </tr> <tr> <td>4</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> <tr> <td>5</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> </tbody> </table> <p>*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0</p>					Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)	1	0.5	17,053	8,712	0.979	2	0.3	11,681	0.438	3	0.2	13,121	0.260	4	0	0	0.000	5	0	0	0.000																														
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																								
1	0.5	17,053	8,712	0.979																																																								
2	0.3		11,681	0.438																																																								
3	0.2		13,121	0.260																																																								
4	0		0	0.000																																																								
5	0		0	0.000																																																								
				Michael O'Rourke BCIN# 19669 																																																								

HEAT LOSS AND GAIN SUMMARY SHEET

MHP 23019

BUILDING: GREENPARK HOMES

SITE: ZADORRA ESTATES INC

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.50

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):	41185.0	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: 57.0 ft	WIDTH: 34.0 ft	EXPOSED PERIMETER:	182.0 ft

2012 OBC - COMPLIANCE PACKAGE		Compliance Package A1	
Component		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		96%	-
HRV/ERV Minimum Efficiency		75%	-
Domestic Hot Water Heater Minimum EF		0.8	-

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

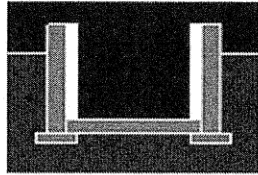


HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

MHP 23019

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Oshawa	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	17.4	 <p>Insulation Configuration</p>
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):	1.2	
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):	1797	

TYPE: PENROSE 2
LO# 97935

Michael O'Rourke BCIN #19669



HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

MHP 23019

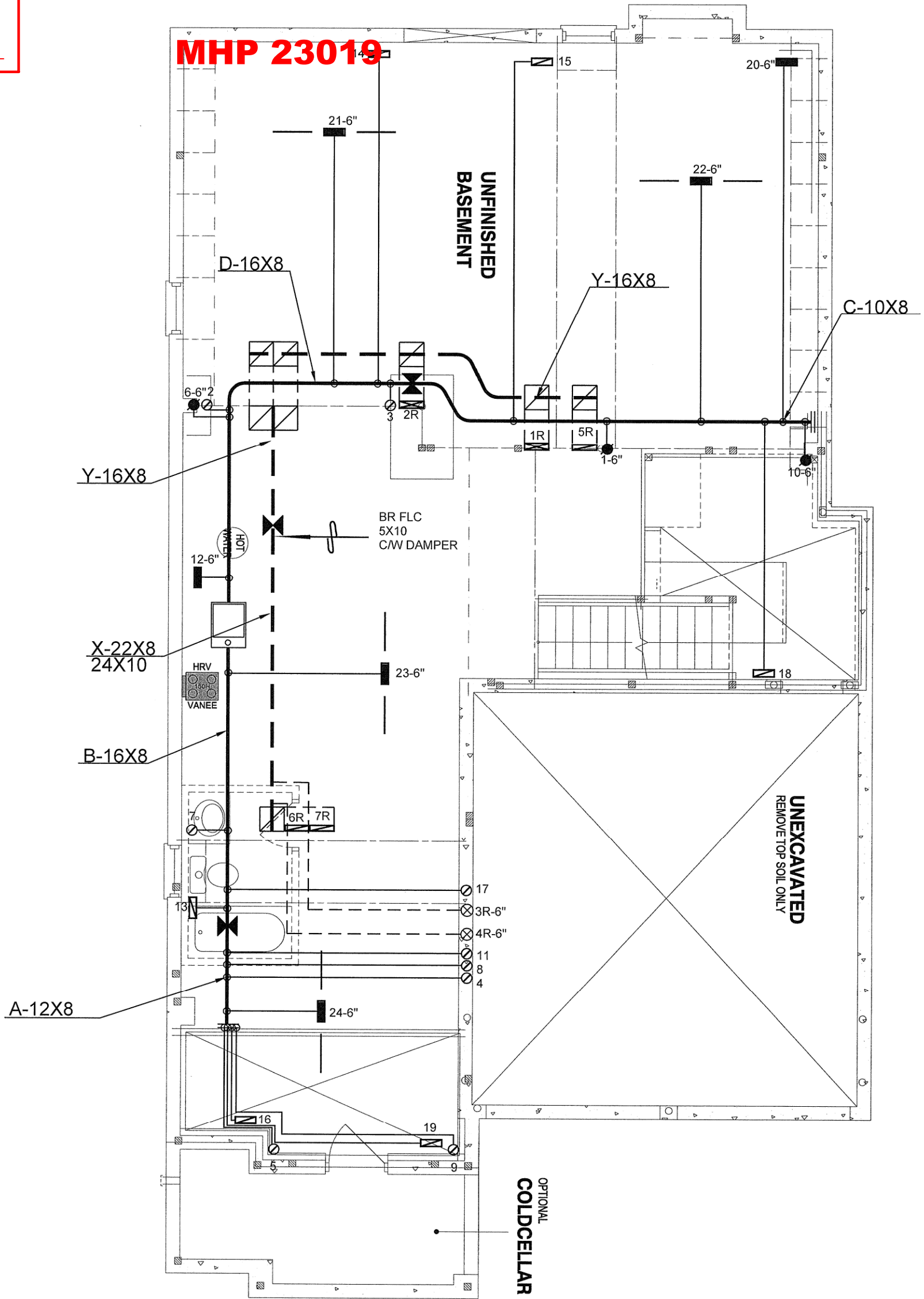
Air Infiltration Residential Load Calculator


Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Oshawa			
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):	1166.2			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa. 3.57	1554.6 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):	0.312			
Cooling Air Leakage Rate (ACH/H):	0.086			

TYPE: PENROSE 2
LO# 97935

Michael O'Rourke BCIN# 19669



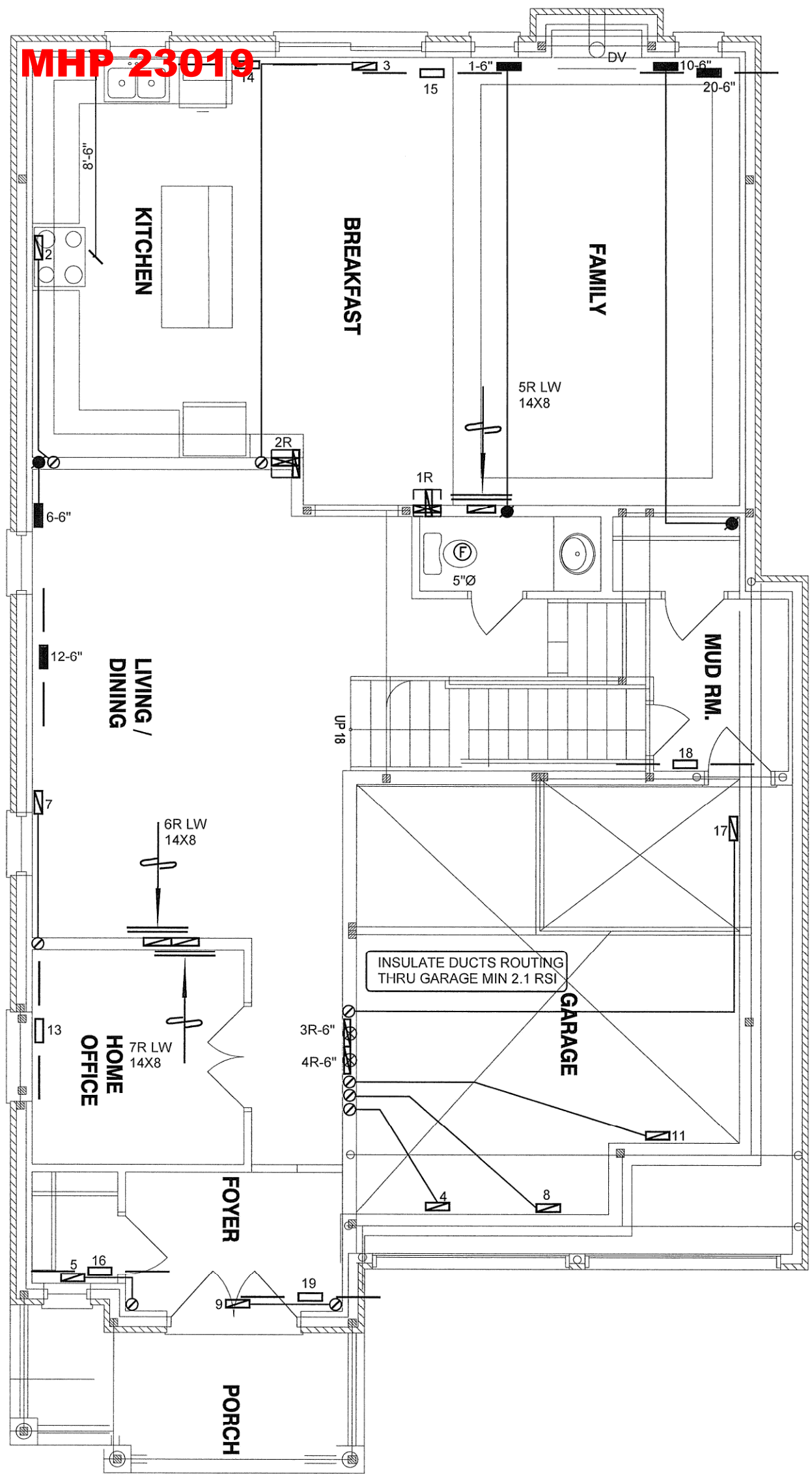
I MICHAEL O'ROURKE HAVE REVIEW
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C. 3.2.5 OF THE
BUILDING CODE.

Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

PACKAGE A1
CSA-F280-12

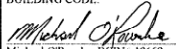
HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		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	

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Client		<div></div> <div>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</div>	HEAT LOSS 52702 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title	
GREENPARK HOMES			MAKE GOODMAN		3RD FLOOR				BASEMENT HEATING LAYOUT	
Project Name ZADORRA ESTATES INC OSHAWA, ONTARIO			MODEL GMEC960603BNA-60		2ND FLOOR	12	4	3		
			INPUT 60 MBTU/H		1ST FLOOR	8	3	2		
PENROSE 2 3046 sqft			OUTPUT 57.6 MBTU/H		BASEMENT	4	1	0	Date	JULY/2022
		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					Scale	3/16" = 1'-0"
		FAN SPEED 1131 cfm @ 0.6" w.c.							BCIN# 19669	
		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#	97935

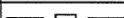







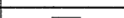





I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.5 OF THE BUILDING CODE.


Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

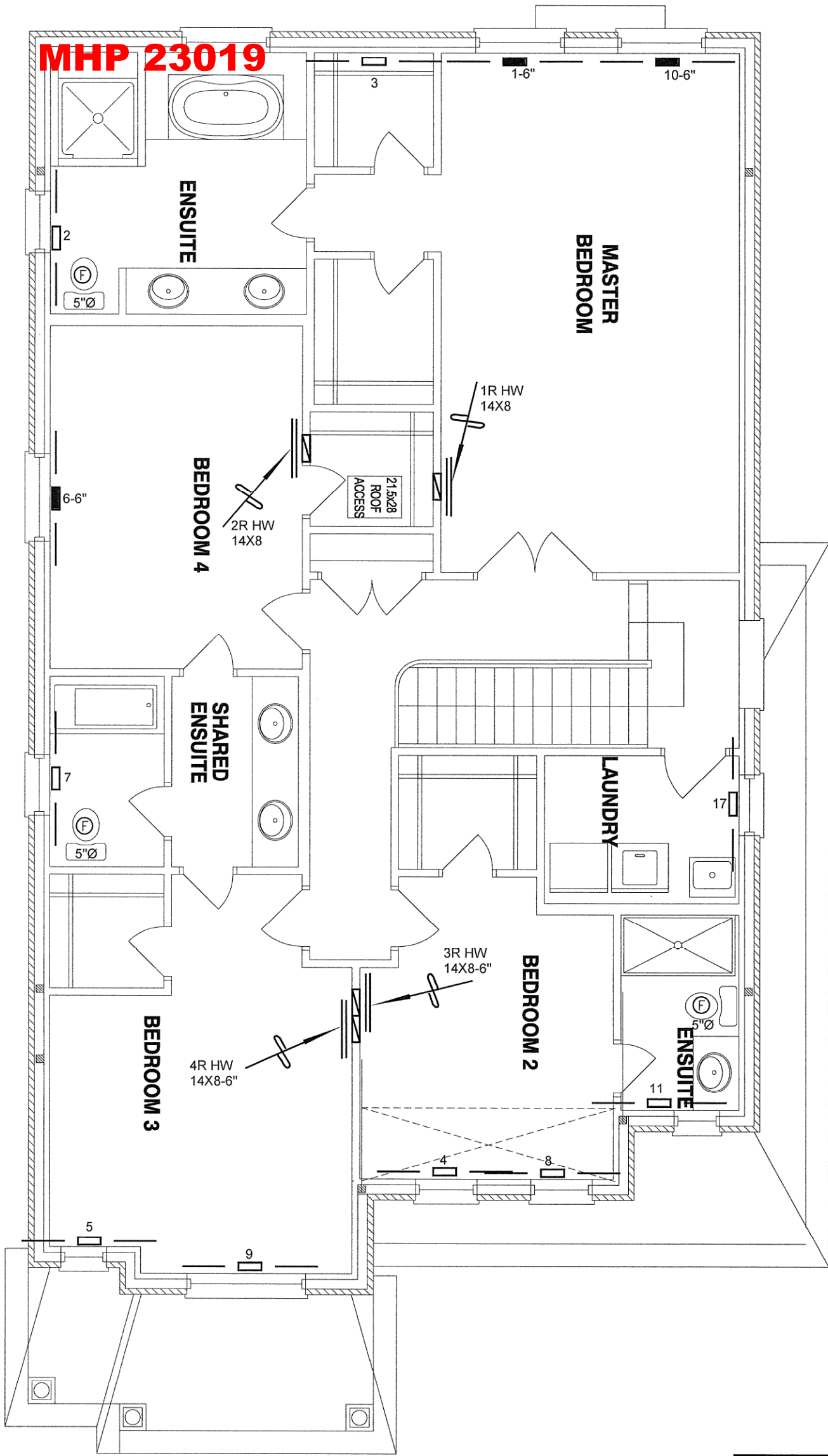
PACKAGE A1

CSA-F280-12


HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR 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		

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Client		<div> 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</div> <div>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.</div>	Sheet Title	
GREENPARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	JULY/2022
ZADORRA ESTATES INC			Scale	3/16" = 1'-0"
OSHAWA, ONTARIO			BCIN# 19669	
PENROSE 2	3046 sqft		LO#	97935

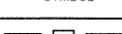







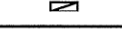





I MICHAEL OROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C. 3.2.5 OF THE BUILDING CODE.


Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

PACKAGE A1

CSA-F280-12

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR 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		

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Client		<div> 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</div> <div>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.</div>	Sheet Title	
GREENPARK HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	JULY/2022
ZADORRA ESTATES INC OSHAWA, ONTARIO			Scale	3/16" = 1'-0"
		BCIN# 19669		
PENROSE 2		LO#		
3046 sqft		97935		