

TRUE COPY
OF PERMIT PLANS
Nov 03 2023

PER:

CLIENT NAME: ZADORA ESTATES INC

BUILDER: GREENPARK HOMES

MHP 23019

		WOB		GFA: 3045		DATE: Sep-23		WINTER NATURAL AIR CHANGE RATE 0.367		HEAT LOSS ΔT °F. 74		CSA-F280-12	
		TYPE: PENROSE 2				LO# 102723		SUMMER NATURAL AIR CHANGE RATE 0.101		HEAT GAIN ΔT °F. 11		SB-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	LOSS GAIN	342	225	54	154	370	144	81		135			
GLAZING	LOSS GAIN												
NORTH	20.8 15.5	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0			
EAST	20.8 41.0	0 0 0	0 0 0	0 0 0	26 540 1067	31 644 1272	0 0 0	0 0 0		10 208 410			
SOUTH	20.8 24.4	0 0 0	11 229 268	0 0 0	0 0 0	0 0 0	16 332 390	9 187 220		0 0 0			
WEST	20.8 41.0	32 665 1314	14 291 575	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0			
SKYLT.	36.4 100.7	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	19.6 2.9	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0			
NET EXPOSED WALL	4.4 0.6	310 1351 200	200 871 129	54 235 35	128 558 83	339 1477 219	128 558 83	72 314 47		125 545 81			
NET EXPOSED BSMT WALL ABOVE GR	3.5 0.5	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0			
EXPOSED CLG	1.3 0.6	385 482 215	156 195 87	96 120 53	182 228 101	271 340 151	243 304 135	110 138 61		61 76 34			
NO ATTIC EXPOSED CLG	2.7 1.2	0 0 0	0 0 0	0 0 0	60 161 72	32 86 38	0 0 0	0 0 0		0 0 0			
EXPOSED FLOOR	2.5 0.4	0 0 0	0 0 0	0 0 0	242 603 89	0 0 0	0 0 0	0 0 0		61 152 23			
BASEMENT/CRAWL HEAT LOSS		0	0	0	0	0	0	0		0			
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0	0		0			
SUBTOTAL HT LOSS		2498	1586	356	2089	2547	1195	639		981			
SUB TOTAL HT GAIN			1059	88	1412	1681	608	327		548			
LEVEL FACTOR / MULTIPLIER	0.20 0.31		0.20 0.31	0.20 0.31	0.20 0.31	0.20 0.31	0.20 0.31	0.20 0.31		0.20 0.31			
AIR CHANGE HEAT LOSS		765	486	109	640	780	366	196		300			
AIR CHANGE HEAT GAIN		106	65	5	87	103	37	20		34			
DUCT LOSS		0	0	0	273	0	0	0		128			
DUCT GAIN		0	0	0	253	0	0	0		58			
HEAT GAIN PEOPLE	240	2	480	0	0	1	240	1		0			
HEAT GAIN APPLIANCES/LIGHTS		786	0	0	786	786	786	0		0			
TOTAL HT LOSS BTU/H		3263	2072	464	3002	3326	1560	834		1409			
TOTAL HT GAIN x 1.3 BTU/H		4031	1462	122	3612	3654	2174	452		831			

		LV/DN		OFF		KT/FM		WIC-2		LAUN		MUD		FOY		WOB		BAS	
ROOM USE		21	28			74	11	15		29		21				54		128	
EXP. WALL		10	10			10	11	9		12		11				9		9	
CLG. HT.																			
FACTORS																			
GRS.WALL AREA	LOSS GAIN	210	280			740	121	135		348		231				486		768	
GLAZING	LOSS GAIN																		
NORTH	20.8 15.5	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	23 478 356		0 0 0		0 0 0				26 540 402		0 0 0	
EAST	20.8 41.0	0 0 0	0 0 0	0 0 0	0 0 0	10 208 410	0 0 0	0 0 0		0 0 0		23 478 944				0 0 0		0 0 0	
SOUTH	20.8 24.4	22 457 537	20 416 488	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0		0 0 0				0 0 0		10 208 244	
WEST	20.8 41.0	0 0 0	0 0 0	0 0 0	78 1621 3202	0 0 0	0 0 0	0 0 0		0 0 0		0 0 0				27 561 1108		0 0 0	
SKYLT.	36.4 100.7	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				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 0	0 0 0	20 392 58		25 489 73						10 196 29		20 392 58	
NET EXPOSED WALL	4.4 0.6	188 819 121	260 1133 168	662 2884 428	111 484 72	112 488 72	328 1429 212	183 797 118		423 1843 273						0 0 0		0 0 0	
NET EXPOSED BSMT WALL ABOVE GR	3.5 0.5	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				0 0 0		384 1349 200	
EXPOSED CLG	1.3 0.6	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	71 89 40	0 0 0		0 0 0		0 0 0				0 0 0		0 0 0	
NO ATTIC EXPOSED CLG	2.7 1.2	0 0 0	0 0 0	10 27 12	0 0 0	0 0 0	18 48 21	0 0 0		0 0 0		0 0 0				0 0 0		0 0 0	
EXPOSED FLOOR	2.5 0.4	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	71 177 26	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		2522	
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0	0		0		0				752			
SUBTOTAL HT LOSS		1276	1548	4532	691	1232	1869	1765		3892						1813		4470	
SUB TOTAL HT GAIN			658	656	3641	482	494	291		1135								502	
LEVEL FACTOR / MULTIPLIER	0.30 0.52		0.30 0.52	0.30 0.52	0.30 0.52	0.30 0.52	0.30 0.52	0.30 0.52		0.30 0.52		0.30 0.52						1.20	
AIR CHANGE HEAT LOSS		658	799	2338	357	377	964	910										10044	
AIR CHANGE HEAT GAIN		41	40	224	30	30	18	70										143	
DUCT LOSS		0	0	0	0	0	0	0		0		0						0	
DUCT GAIN		0	0	0	0	0	0	0		0		0						0	
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0		0		0				0		0	
HEAT GAIN APPLIANCES/LIGHTS		786	786	786	786	786	786	786		0		0				0		786	
TOTAL HT LOSS BTU/H		1935	2347	6870	1048	1770	2833	2675		3892						3892		14514	
TOTAL HT GAIN x 1.3 BTU/H		1930	1927	6047	665	1874	402	1566		2357								1860	

TOTAL HEAT GAIN BTU/H: 35203

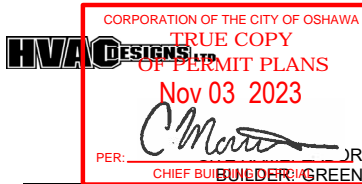
TONS: 2.93

LOSS DUE TO VENTILATION LOAD BTU/H: 1593

STRUCTURAL HEAT LOSS: 53814

TOTAL COMBINED HEAT LOSS BTU/H: 55407





MHP 23019

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HEATING CFM 1131						COOLING CFM 1131					
TOTAL HEAT LOSS 53,814						TOTAL HEAT GAIN 34,967					
AIR FLOW RATE CFM 21.02						AIR FLOW RATE CFM 32.34					
RUN COUNT						4th					
S/A						0					
R/A						0					
3rd						0					
2nd						12					
1st						8					
Bas						4					
WOB						TYPE: PENROSE 2					
furnace pressure						0.6					
furnace filter						0.05					
a/c coil pressure						0.2					
available pressure						0.35					
for s/a & r/a						0.17					
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					
#GOODMAN						AFUE = 96 %					
GMEC960603BNA						INPUT (BTU/H) = 60,000					
FAN SPEED						OUTPUT (BTU/H) = 57,600					
LOW						DESIGN CFM = 1131					
MEDLOW						CFM @ .6" E.S.P.					
MEDIUM						928					
MEDIUM HIGH						1017					
HIGH						1131					
TEMPERATURE RISE						47 °F					

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	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	BAS
RM LOSS MBH.	1.63	2.07	0.46	1.50	1.66	1.56	0.83	1.50	1.66	1.63	1.41	1.93	2.35	2.29	2.29	1.05	1.77	2.83	2.67	2.29	4.60	4.60	4.60	4.60
CFM PER RUN HEAT	34	44	10	32	35	33	18	32	35	34	30	41	49	48	48	22	37	60	56	48	97	97	97	97
RM GAIN MBH.	2.02	1.46	0.12	1.81	1.83	2.17	0.45	1.81	1.83	2.02	0.83	1.93	2.02	2.02	0.67	1.87	0.40	1.57	2.02	1.05	1.05	1.05	1.05	1.05
CFM PER RUN COOLING	65	47	4	58	59	70	15	58	59	65	27	62	62	65	65	22	61	13	51	65	34	34	34	34
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	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	26
EQUIVALENT LENGTH	170	160	160	170	160	160	150	160	150	130	200	190	140	150	200	160	140	170	140	180	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	216
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	0.08
ROUND DUCT SIZE	6	5	4	5	5	6	4	5	5	5	4	6	5	5	5	4	5	5	5	6	6	6	6	6
HEATING VELOCITY (ft/min)	173	323	115	235	257	168	207	235	257	250	344	209	360	352	352	252	272	441	411	245	495	495	495	495
COOLING VELOCITY (ft/min)	331	345	46	426	433	357	172	426	433	477	310	316	455	477	477	252	448	95	374	331	173	173	173	173
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	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	B	A

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	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	BAS
RM LOSS MBH.	1.63	2.07	0.46	1.50	1.66	1.56	0.83	1.50	1.66	1.63	1.41	1.93	2.35	2.29	2.29	1.05	1.77	2.83	2.67	2.29	4.60	4.60	4.60	4.60
CFM PER RUN HEAT	34	44	10	32	35	33	18	32	35	34	30	41	49	48	48	22	37	60	56	48	97	97	97	97
RM GAIN MBH.	2.02	1.46	0.12	1.81	1.83	2.17	0.45	1.81	1.83	2.02	0.83	1.93	2.02	2.02	0.67	1.87	0.40	1.57	2.02	1.05	1.05	1.05	1.05	1.05
CFM PER RUN COOLING	65	47	4	58	59	70	15	58	59	65	27	62	62	65	65	22	61	13	51	65	34	34	34	34
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	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	26
EQUIVALENT LENGTH	170	160	160	170	160	160	150	160	150	130	200	190	140	150	200	160	140	170	140	180	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	216
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	0.08
ROUND DUCT SIZE	6	5	4	5	5	6	4	5	5	5	4	6	5	5	5	4	5	5	5	6	6	6	6	6
HEATING VELOCITY (ft/min)	173	323	115	235	257	168	207	235	257	250	344	209	360	352	352	252	272	441	411	245	495	495	495	495
COOLING VELOCITY (ft/min)	331	345	46	426	433	357	172	426	433	477	310	316	455	477	477	252	448	95	374	331	173	173	173	173
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	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	B	A

SUPPLY AIR TRUNK SIZE																	RETURN AIR TRUNK SIZE															
	TRUNK	STATIC	ROUND	RECT			VELOCITY			TRUNK	STATIC	ROUND	RECT			VELOCITY	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	339	0.07	9.7	12	x	8	509	TRUNK G	0	0.00	0	0	x	8	0	0	TRUNK O	0	0.05	0	0	x	8	0								
TRUNK B	581	0.07	11.8	16	x	8	654	TRUNK H	0	0.00	0	0	x	8	0	0	TRUNK P	0	0.05	0	0	x	8	0								
TRUNK C	321	0.07	9.5	10	x	8	578	TRUNK I	0	0.00	0	0	x	8	0	0	TRUNK Q	0	0.05	0	0	x	8	0								
TRUNK D	553	0.07	11.6	16	x	8	622	TRUNK J	0	0.00	0	0	x	8	0	0	TRUNK R	0	0.05	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	0	TRUNK S	0	0.05	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	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	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								
RETURN AIR #	1	2	3	4	5	6	7									BR																
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																
AIR VOLUME	135	155	95	85	135	185	155	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																
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																

PER:  NROSE 2
SUE NAME: ZADORA ESTATES INC
CHIEF BUILDING OFFICIALLO # 102723
WOB

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES		9.32.3.1(1)
a)	<input checked="" type="checkbox"/> Direct vent (sealed combustion) only	
b)	<input type="checkbox"/> Positive venting induced draft (except fireplaces)	
c)	<input type="checkbox"/> Natural draft, B-vent or induced draft gas fireplace	
d)	<input type="checkbox"/> Solid Fuel (including fireplaces)	
e)	<input type="checkbox"/> No Combustion Appliances	

HEATING SYSTEM	
<input checked="" type="checkbox"/> Forced Air	<input type="checkbox"/> Non Forced Air
<input type="checkbox"/> Electric Space Heat	

HOUSE TYPE		9.32.1(2)
<input checked="" type="checkbox"/> I	Type a) or b) appliance only, no solid fuel	
<input type="checkbox"/> II	Type I except with solid fuel (including fireplaces)	
<input type="checkbox"/> III	Any Type c) appliance	
<input type="checkbox"/> IV	Type I, or II with electric space heat	
<input type="checkbox"/>	Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS		O.N.H.W.P.
<input type="checkbox"/> 1	Exhaust only/Forced Air System	
<input type="checkbox"/> 2	HRV with Ducting/Forced Air System	
<input checked="" type="checkbox"/> 3	HRV Simplified/connected to forced air system	
<input type="checkbox"/> 4	HRV with Ducting/non forced air system	
<input type="checkbox"/>	Part 6 Design	

TOTAL VENTILATION CAPACITY		9.32.3.3(1)
Basement + Master Bedroom	<u>2</u> @ 21.2 cfm <u>42.4</u> cfm	
Other Bedrooms	<u>3</u> @ 10.6 cfm <u>31.8</u> cfm	
Kitchen & Bathrooms	<u>5</u> @ 10.6 cfm <u>53</u> cfm	
Other Rooms	<u>5</u> @ 10.6 cfm <u>53.0</u> cfm	
Table 9.32.3.A.	TOTAL <u>180.2</u> 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	<u>180.2</u> cfm	
Less Principal Ventil. Capacity	<u>79.5</u> cfm	
Required Supplemental Capacity	<u>100.7</u> cfm	

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE V150H	Location: BSMT
<u>79.5</u> cfm	<input checked="" type="checkbox"/> 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	<input checked="" type="checkbox"/>	3.5
BATH	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	3.5
ENS-2	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	3.5
PWD	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE V150H		
<u>150</u> cfm high	<u>35</u> cfm low	
<u>75</u> % Sensible Efficiency	<input checked="" type="checkbox"/> 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:	
HRAI #	001820
Date:	September-23



MHP 23019

375 Finlay Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																						
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																						
LO#: 102723		Model: PENROSE 2		Builder: GREENPARK HOMES																																																		
				Date: 9/28/2023																																																		
Volume Calculation			Air Change & Delta T Data																																																			
House Volume			<table border="1" style="width: 100%;"><tr><td>WINTER NATURAL AIR CHANGE RATE</td><td>0.367</td></tr><tr><td>SUMMER NATURAL AIR CHANGE RATE</td><td>0.101</td></tr></table>		WINTER NATURAL AIR CHANGE RATE	0.367	SUMMER NATURAL AIR CHANGE RATE	0.101																																														
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																			
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ <p>0.367 x 323.95 x 41 °C x 1.2 = 5887 W</p> <p>= 20088 Btu/h</p>			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ <p>= 0.101 x 323.95 x 6 °C x 1.2 = 240 W</p> <p>= 818 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)																																																						
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																						
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<p>*HLairbv = Air leakage heat loss + ventilation heat loss</p> <p>*For a balanced or supply only ventilation system HLairve = 0</p>																																																						



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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: PENROSE 2 **WOB** **BUILDER:** GREENPARK HOMES
SFQT: 3045 **LO#** 102723 **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):	1.60	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:	128.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	54.0 ft

2012 OBC - COMPLIANCE PACKAGE

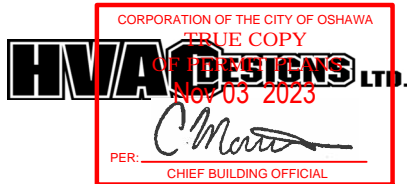
Component

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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

INDIVIDUAL BCIN: 19669
 MICHAEL O'ROURKE

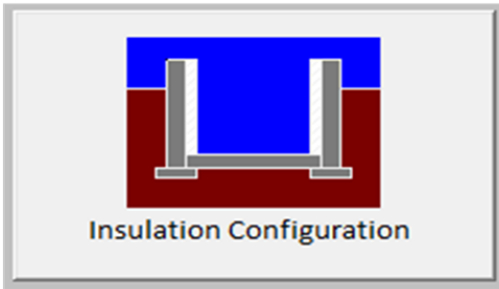


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HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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):	6.1	 <p>Insulation Configuration</p>
Floor Width (m):	10.4	
Exposed Perimeter (m):	39.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.58	
Window Area (m ²):	0.9	
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):		739

TYPE: PENROSE 2
LO# 102723

WOB

Michael O'Rourke BCIN #19669

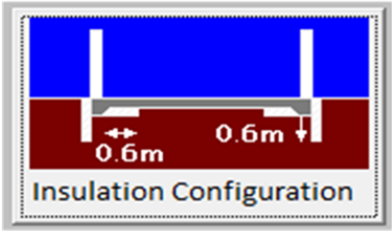


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HVAC Designs Ltd.
375 Finley Ave, Suite 202
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905-619-2300

Residential Slab on Grade 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		
Length (m):	3.0	
Width (m):	10.4	
Exposed Perimeter (m):	16.5	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		220

TYPE: PENROSE 2
LO# 102723

WOB

Michael O'Rourke BCIN# 19669



MHP 23019

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

Air Infiltration Residential Load Calculator

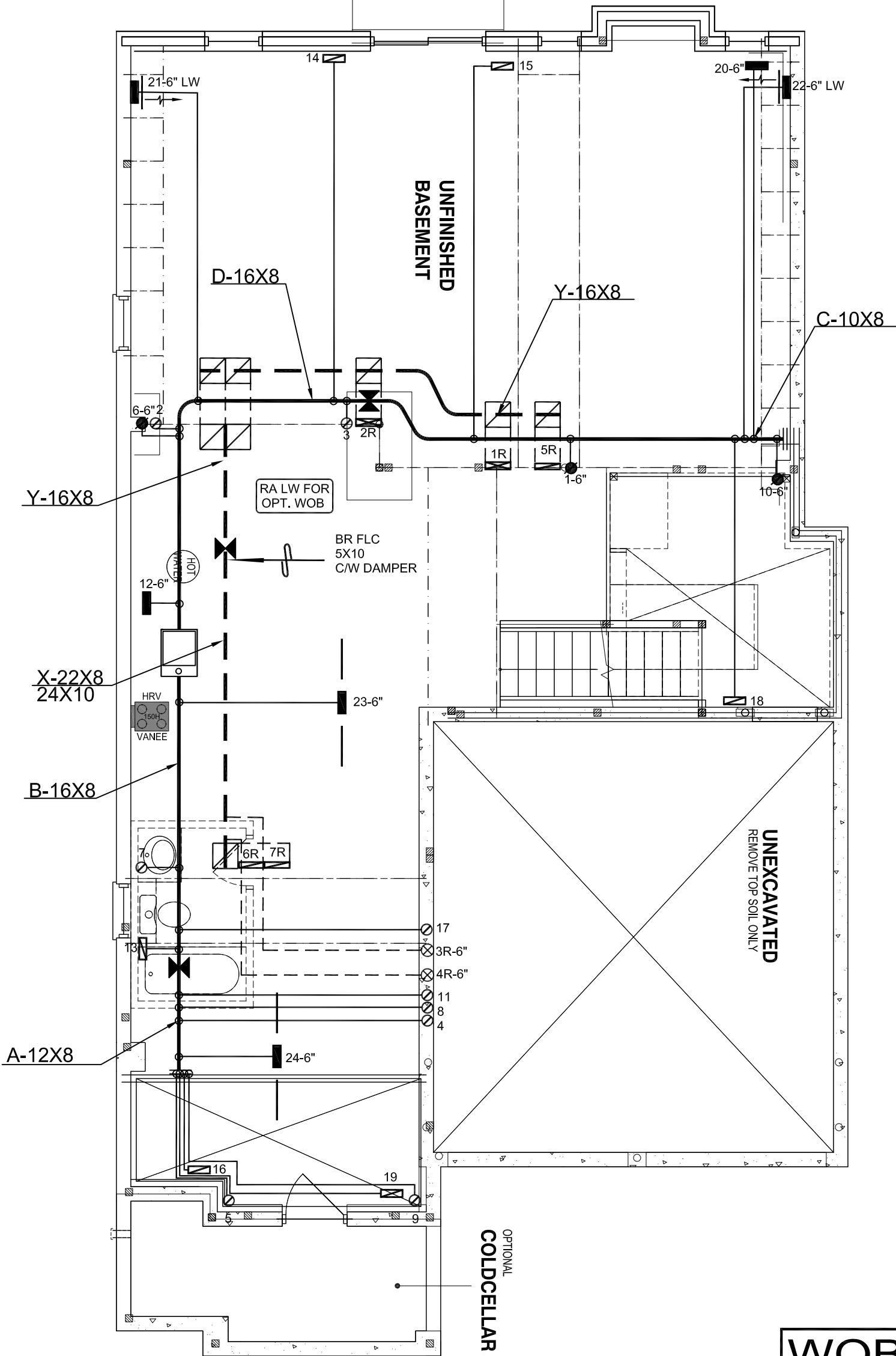
Supplemental tool for CAN/CSA-F280

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):	8.53			
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.	1554.6 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):	0.367			
Cooling Air Leakage Rate (ACH/H):	0.101			

TYPE: PENROSE 2
LO# 102723

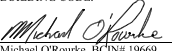
WOB













Michael O'Rourke BCIN# 19669



WOB
PACKAGE A1
CSA-F280-12

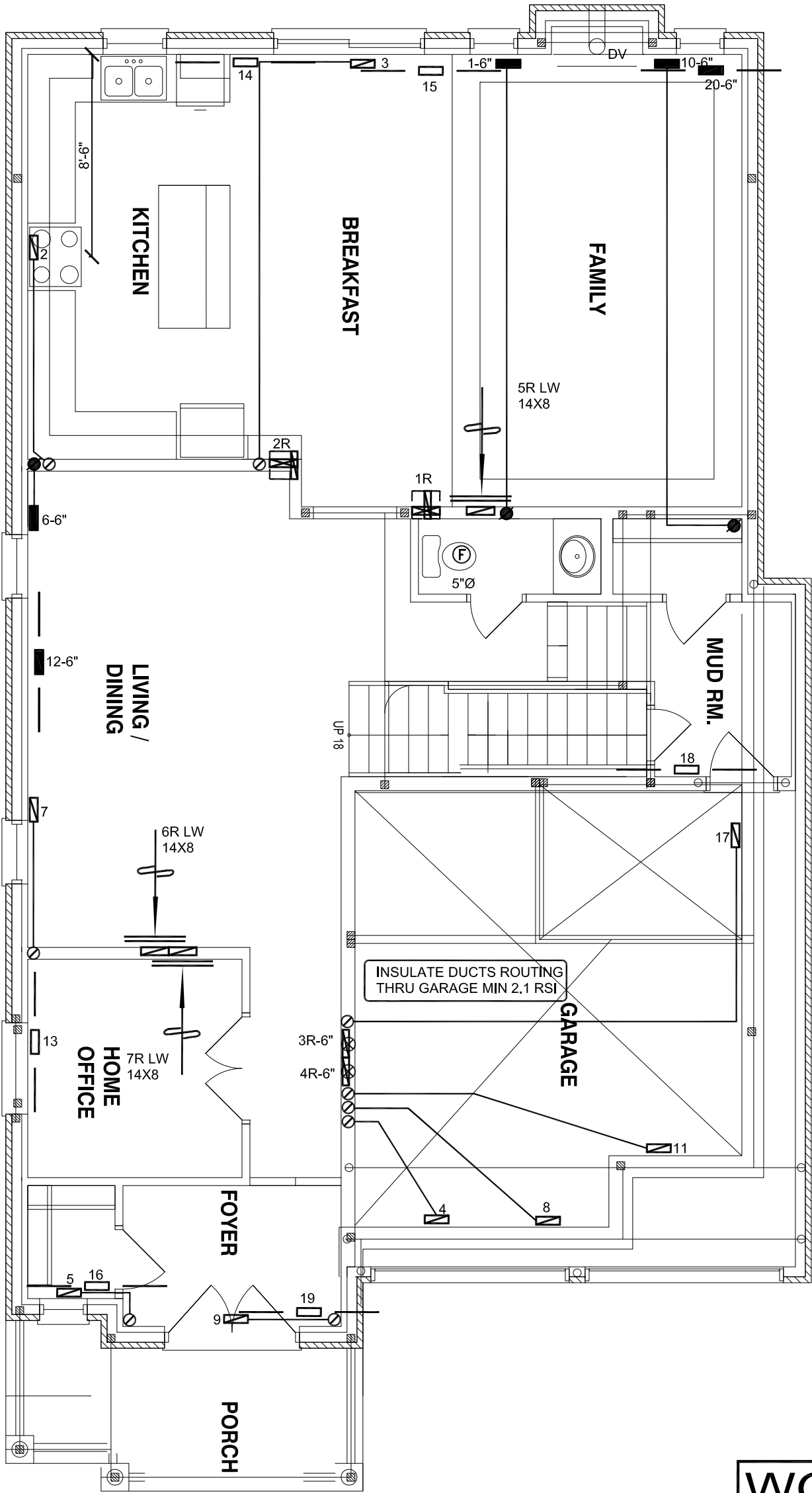
I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.


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

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	

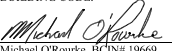
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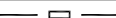











Client		<div></div> <div>375 Finley Ave - Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services</div>	HEAT LOSS 55407 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet 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	Date	SEPT/2023
			OUTPUT 57.6 MBTU/H	BASEMENT	4	1	0	Scale	3/16" = 1'-0"
		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				BCIN# 19669		
WOB PENROSE 2		FAN SPEED 1131 cfm @ 0.6" w.c.					LO#	102723	
3046 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.							



WOB
PACKAGE A1
CSA-F280-12

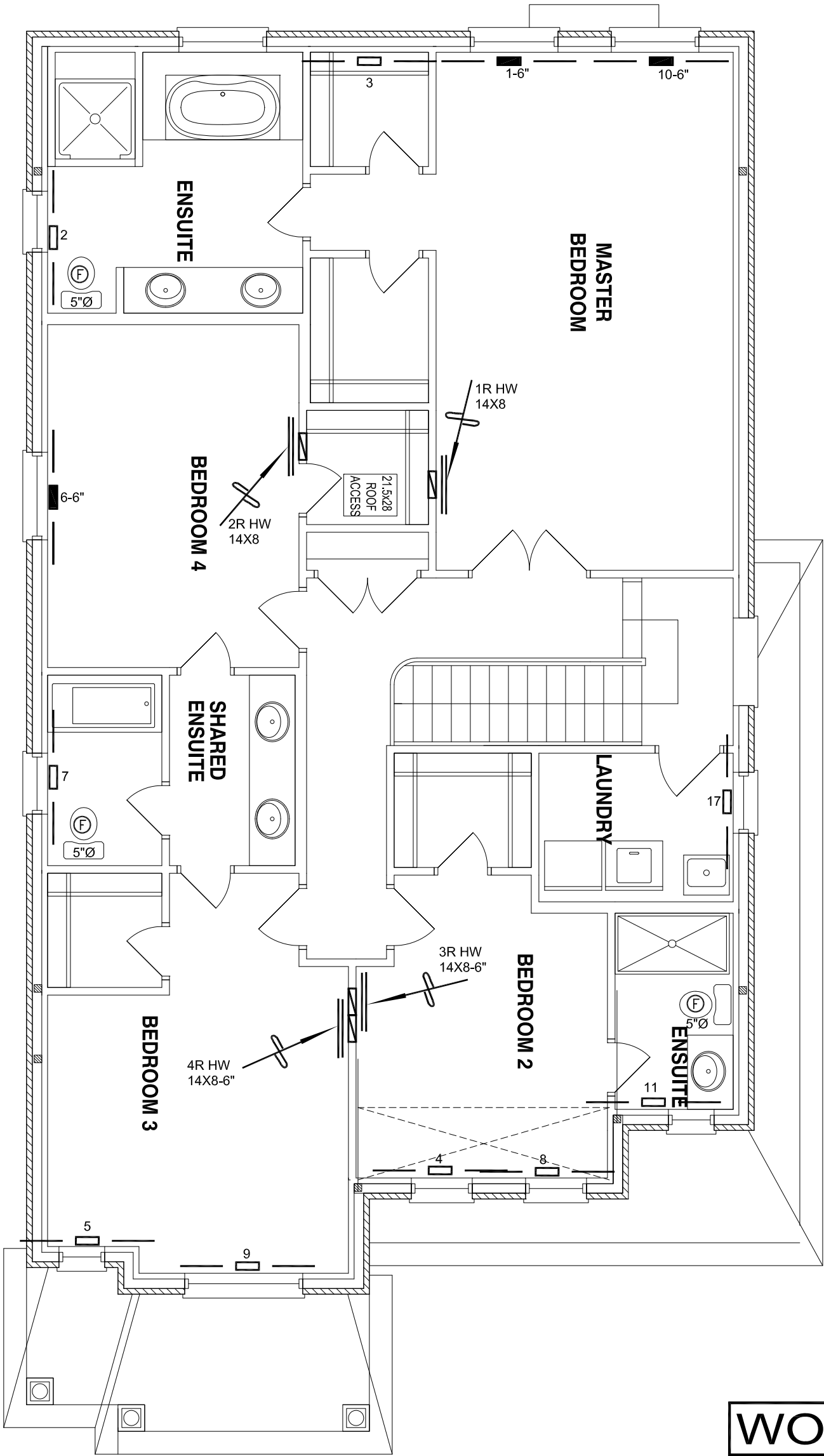
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Michael O'Rourke, BCIN# 19669
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HVAC LEGEND								3.		
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	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR 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		

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GREENPARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	SEPT/2023
ZADORRA ESTATES INC OSHAWA, ONTARIO			Scale	3/16" = 1'-0"
WOB PENROSE 2			BCIN# 19669	
3046 sqft	LO# 102723			



WOB

PACKAGE A1

CSA-F280-12

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Michael O'Rourke

Michael O'Rourke, BCIN# 19669

HVAC DESIGNS LTD.

HVAC LEGEND							3.		
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	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS	

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GREENPARK HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	SEPT/2023
ZADORRA ESTATES INC OSHAWA, ONTARIO			Scale	3/16" = 1'-0"
			BCIN# 19669	
WOB			LO#	102723
PENROSE 2	3046 sqft			