

SITE NAME: **ZADORRA ESTATING OFFICIAL** WOB: **DATE: Jul-23** WINTER NATURAL AIR CHANGE RATE: **0.367** HEAT LOSS AT °F: **74** CSA-F280-12
 BUILDER: **GREENPARK HOMES** TYPE: **VILLA 5** GFA: **2834** LO# **101810** SUMMER NATURAL AIR CHANGE RATE: **0.101** HEAT GAIN AT °F: **11** SB-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	FLEX	WIC-2	ENS-2		
			32	23	5	14	27	12	8	33	6	13		
			9	9	9	9	9	9	9	9	9	9		
FACTORS														
GRS.WALL AREA	LOSS	GAIN	288	207	45	126	243	108	72	297	54	117		
GLAZING	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
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	20.8	24.4	0	0	0	18	374	439	0	0	0	0	7	145
WEST	20.8	41.0	20	416	821	14	291	575	0	0	0	0	0	0
SKYLT.	36.4	100.7	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
NET EXPOSED WALL	4.4	0.6	268	1168	173	175	762	113	45	196	29	108	471	70
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	328	411	183	131	164	73	47	59	26	201	252	112
NO ATTIC EXPOSED CLG	2.7	1.2	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
BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS			0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS			1994		1591	255	1096	2296	1040	557	2397	566	722	
SUB TOTAL HT GAIN				1177	1200	55	460	1735	618	110	1389	516	285	
LEVEL FACTOR / MULTIPLIER	0.20	0.30		0.20	0.30	0.20	0.30	0.20	0.30	0.20	0.30	0.20	0.30	0.20
AIR CHANGE HEAT LOSS			591		472	76	325	680	308	165	710	168	214	
AIR CHANGE HEAT GAIN				74	75	3	29	109	39	7	87	32	18	
DUCT LOSS			0		0	0	0	298	135	72	311	73	0	
DUCT GAIN			0		0	0	0	266	147	12	148	55	0	
HEAT GAIN PEOPLE	240	2	480	0	0	1	240	1	240	0	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS			577		0	0	577	577	577	0	0	0	0	
TOTAL HT LOSS BTU/H			2585		2063	330	1421	3274	1484	794	3417	807	936	
TOTAL HT GAIN x 1.3 BTU/H			2999		1657	76	1697	3804	2107	168	2110	785	394	

ROOM USE	EXP. WALL	CLG. HT.	H-OFF	DN/LV	KT/BF	FAM	PWD	FOY					WOB	BAS
			0	40	33	33	20	38					37	139
			10	10	10	10	10	10					9	9
FACTORS														
GRS.WALL AREA	LOSS	GAIN	0	400	330	330	200	380					333	834
GLAZING	LOSS	GAIN					LOSS	GAIN	LOSS	GAIN			LOSS	GAIN
NORTH	20.8	15.5	22	457	340	0	0	0	0	0	0	0	57	1184
EAST	20.8	41.0	0	0	0	0	0	0	22	457	903	0	0	0
SOUTH	20.8	24.4	0	0	0	44	914	1073	0	0	0	0	0	0
WEST	20.8	41.0	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
DOORS	19.6	2.9	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.4	0.6	-22	-96	-14	356	1551	230	269	1172	174	308	1342	199
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	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	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	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
BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS			0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS			361		2465	2439	1799	1191	2352				437	✓
SUB TOTAL HT GAIN				326	1303	2678	1102	177	1184				2824	4413
LEVEL FACTOR / MULTIPLIER	0.30	0.52		0.30	0.52	0.30	0.52	0.30	0.52				1060	471
AIR CHANGE HEAT LOSS			189		1293	1279	943	625	1233					9271
AIR CHANGE HEAT GAIN				20	82	168	69	11	74					96
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	0	0				0	0
HEAT GAIN APPLIANCES/LIGHTS			577		577	577	577	577	577				0	577
TOTAL HT LOSS BTU/H			551		3758	3719	2742	1816	3585				2824	13684
TOTAL HT GAIN x 1.3 BTU/H				1200	2550	4449	2272	244	1635				1378	1486

TOTAL HEAT GAIN BTU/H: **31249** TONS: **2.60** LOSS DUE TO VENTILATION LOAD BTU/H: **1593** STRUCTURAL HEAT LOSS: **49790** TOTAL COMBINED HEAT LOSS BTU/H: **51382**

SITE NAME: GREENPARK HOMES
BUILDER: GREENPARK HOMESWOB
TYPE: VILLA 5

DATE: Jul-23

GFA: 2834 LO# 101810

HEATING CFM 928 COOLING CFM 928
TOTAL HEAT LOSS 49,790 TOTAL HEAT GAIN 31,013
AIR FLOW RATE CFM 18.64 AIR FLOW RATE CFM 29.92furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure
for s/a & r/a 0.35#GOODMAN
GMEC960603BNA 60
FAN SPEED
LOW
MEDLOW
MEDIUM 928
MEDIUM HIGH 1017
HIGH 1131AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = **57,600**DESIGN CFM = **928**
CFM @ .6" E.S.P.TEMPERATURE RISE 57 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	13	7	5
R/A	0	0	5	2	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	18	19	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	FLEX	WIC-2	MBR	ENS-2	H-OFF	DN/LV	KT/BF	KT/BF	FAM	PWD	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.29	1.03	0.33	1.42	1.64	1.48	0.79	3.42	0.81	1.29	0.94	0.55	3.76	1.86	1.86	2.74	1.82	3.58	3.30	3.30	3.30	3.30
CFM PER RUN HEAT	24	19	6	26	31	28	15	64	15	24	17	10	70	35	35	51	34	67	62	62	62	62
RM GAIN MBH.	1.50	0.83	0.08	1.70	1.90	2.11	0.17	2.11	0.78	1.50	0.39	1.20	2.55	2.22	2.22	2.27	0.24	1.64	0.57	0.57	0.57	0.57
CFM PER RUN COOLING	45	25	2	51	57	63	5	63	23	45	12	36	76	67	67	68	7	49	17	17	17	17
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	0.17	0.17
ACTUAL DUCT LGH.	33	50	21	29	56	45	47	60	54	40	31	10	21	25	26	35	19	43	39	32	18	37
EQUIVALENT LENGTH	140	160	130	200	160	170	180	150	150	170	130	110	110	90	130	130	120	130	120	120	150	110
TOTAL EFFECTIVE LENGTH	173	210	151	229	216	215	227	210	204	210	161	120	131	115	156	165	139	173	159	152	168	147
ADJUSTED PRESSURE	0.1	0.08	0.11	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.11	0.14	0.13	0.15	0.11	0.1	0.12	0.1	0.11	0.11	0.1	0.12
ROUND DUCT SIZE	4	4	4	6	5	6	4	5	4	5	4	4	5	5	5	5	4	5	5	5	5	5
HEATING VELOCITY (ft/min)	275	218	69	133	228	143	172	470	172	176	195	115	514	257	257	374	390	492	455	455	455	455
COOLING VELOCITY (ft/min)	516	287	23	260	419	321	57	463	264	330	138	413	558	492	492	499	80	360	125	125	125	125
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	C	B	D	D	A	B	A	A	A	D	B	D	B	C	D	B	D	A	B	D	B	A

RUN #	25	26	27
ROOM NAME	BAS	BED-3	ENS
RM LOSS MBH.	3.30	1.64	1.03
CFM PER RUN HEAT	62	31	19
RM GAIN MBH.	0.57	1.90	0.83
CFM PER RUN COOLING	17	57	25
ADJUSTED PRESSURE	0.17	0.17	0.17
ACTUAL DUCT LGH.	23	59	40
EQUIVALENT LENGTH	80	170	150
TOTAL EFFECTIVE LENGTH	103	229	190
ADJUSTED PRESSURE	0.17	0.08	0.09
ROUND DUCT SIZE	5	5	4
HEATING VELOCITY (ft/min)	455	228	218
COOLING VELOCITY (ft/min)	125	419	287
OUTLET GRILL SIZE	3X10	3X10	3X10
TRUNK	A	C	

SUPPLY AIR TRUNK SIZE

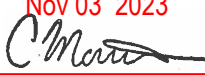
	TRUNK	STATIC	ROUND	RECT			VELOCITY		TRUNK	STATIC	ROUND	RECT		VELOCITY
	CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT		(ft/min)
TRUNK A	285	0.08	8.8	10	x	8	513		TRUNK G	0	0.00	0	0	8
TRUNK B	309	0.08	9	10	x	8	556		TRUNK H	0	0.00	0	0	8
TRUNK C	594	0.08	11.5	16	x	8	668		TRUNK I	0	0.00	0	0	8
TRUNK D	197	0.08	7.6	8	x	8	443		TRUNK J	0	0.00	0	0	8
TRUNK E	0	0.00	0	0	x	8	0		TRUNK K	0	0.00	0	0	8
TRUNK F	0	0.00	0	0	x	8	0		TRUNK L	0	0.00	0	0	8

RETURN AIR TRUNK SIZE

	TRUNK	STATIC	ROUND	RECT			VELOCITY
	CFM	PRESS.	DUCT	DUCT			(ft/min)
TRUNK O	0	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	928	0.06	14.7	26	x	8	642
TRUNK Y	0	0.06	0	0	x	8	0
TRUNK Z	0	0.06	0	0	x	8	0
DROP	928	0.06	14.7	24	x	10	557

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	
AIR VOLUME	120	110	115	106	117	85	120	0	0	0	0	0	0	0	0	155
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.	31	40	52	44	45	14	13	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	135	175	184	175	215	215	135	0	0	0	0	0	0	0	0	220
TOTAL EFFECTIVE LH	166	215	236	219	260	229	148	1	1	1	1	1	1	1	1	234
ADJUSTED PRESSURE	0.09	0.07	0.06	0.07	0.06	0.06	0.10	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.06
ROUND DUCT SIZE	6	6.3	6.7	6	6.7	6	6	0	0	0	0	0	0	0	0	7.5
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

Nov 03 2023

PER: 
TYPE: CHIEF BUILDING OFFICIAL

SITE NAME: ZADORRA ESTATES INC

MHP 23036

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2

Tel: 905.619.2300 Fax: 905.619.2375

Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

LO # 101810
WOB

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	<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		<u>79.5</u> ✓ 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	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
79.5 CFM	X 74 F	X 1.08	X	0.25

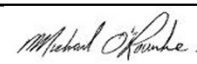
SUPPLEMENTAL FANS		BY INSTALLING CONTRACTOR		
Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	✓	3.5
BATH	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-2	BY INSTALLING CONTRACTOR	50	✓	3.5
PWD	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE V150H		
<u>150</u> cfm high	<u>35</u> cfm low	
<u>75</u> % 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:	
HRAI #	001820
Date:	July-23

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																			
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																			
LO#: 101810		Model: VILLA 5		Builder: GREENPARK HOMES			Date: 2023-07-14																																																												
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>1231</td> <td>9</td> <td>11079</td> </tr> <tr> <td>First</td> <td>1231</td> <td>10</td> <td>12310</td> </tr> <tr> <td>Second</td> <td>1625</td> <td>9</td> <td>14625</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>38,014.0 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>1076.4 m³</td> </tr> </tbody> </table>					Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1231	9	11079	First	1231	10	12310	Second	1625	9	14625	Third	0	9	0	Fourth	0	9	0	Total:			38,014.0 ft³	Total:			1076.4 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">WINTER NATURAL AIR CHANGE RATE</td> <td>0.367</td> </tr> <tr> <td colspan="2">SUMMER NATURAL AIR CHANGE RATE</td> <td>0.101</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>-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> </table>					WINTER NATURAL AIR CHANGE RATE		0.367	SUMMER NATURAL AIR CHANGE RATE		0.101	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-19	41	74	Summer DTDc	24	30	6	11
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5.2.3.1 Heat Loss due to Air Leakage					6.2.6 Sensible Gain due to Air Leakage																																																														
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.367 x 299.01 x 41 °C x 1.2 = 5434 W = 18541 Btu/h					$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.101 x 299.01 x 6 °C x 1.2 = 221 W = 755 Btu/h																																																														
5.2.3.2 Heat Loss due to Mechanical Ventilation					6.2.7 Sensible heat Gain due to Ventilation																																																														
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 74 °F x 1.08 x 0.25 = 1593 Btu/h					$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 11 °F x 1.08 x 0.25 = 236 Btu/h																																																														
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																																			
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ <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">18,541</td> <td>7,237</td> <td>1.281</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>10,608</td> <td>0.524</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>12,515</td> <td>0.296</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> *HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0										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	18,541	7,237	1.281	2	0.3	10,608	0.524	3	0.2	12,515	0.296	4	0	0	0.000	5	0	0	0.000																																
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**MHP 23036**

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: VILLA 5 **WOB** **BUILDER:** GREENPARK HOMES
SFQT: 2834 **LO#** 101810 **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):	38014.0	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:	6.0 ft
LENGTH: 58.0 ft WIDTH: 30.0 ft		EXPOSED PERIMETER:	139.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	37.0 ft

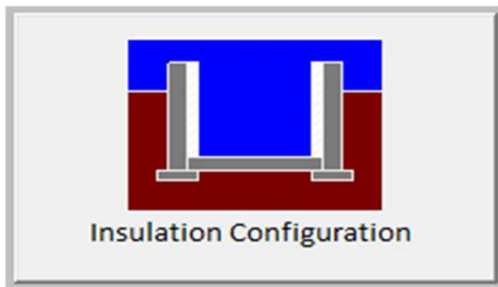
2012 OBC - COMPLIANCE PACKAGE**Component****Compliance Package
A1****Nominal Min. Eff.**

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

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):	4.6	 Insulation Configuration
Floor Width (m):	9.1	
Exposed Perimeter (m):	42.4	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.51	
Window Area (m ²):	0.8	
Door Area (m ²):	2.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		689

TYPE: VILLA 5
LO# 101810

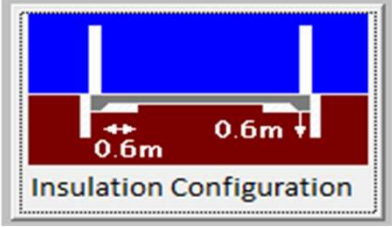
WOB

Michael O'Rourke BCIN #19669



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):	1.5	
Width (m):	8.2	
Exposed Perimeter (m):	11.3	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		128

TYPE: VILLA 5
LO# 101810

WOB

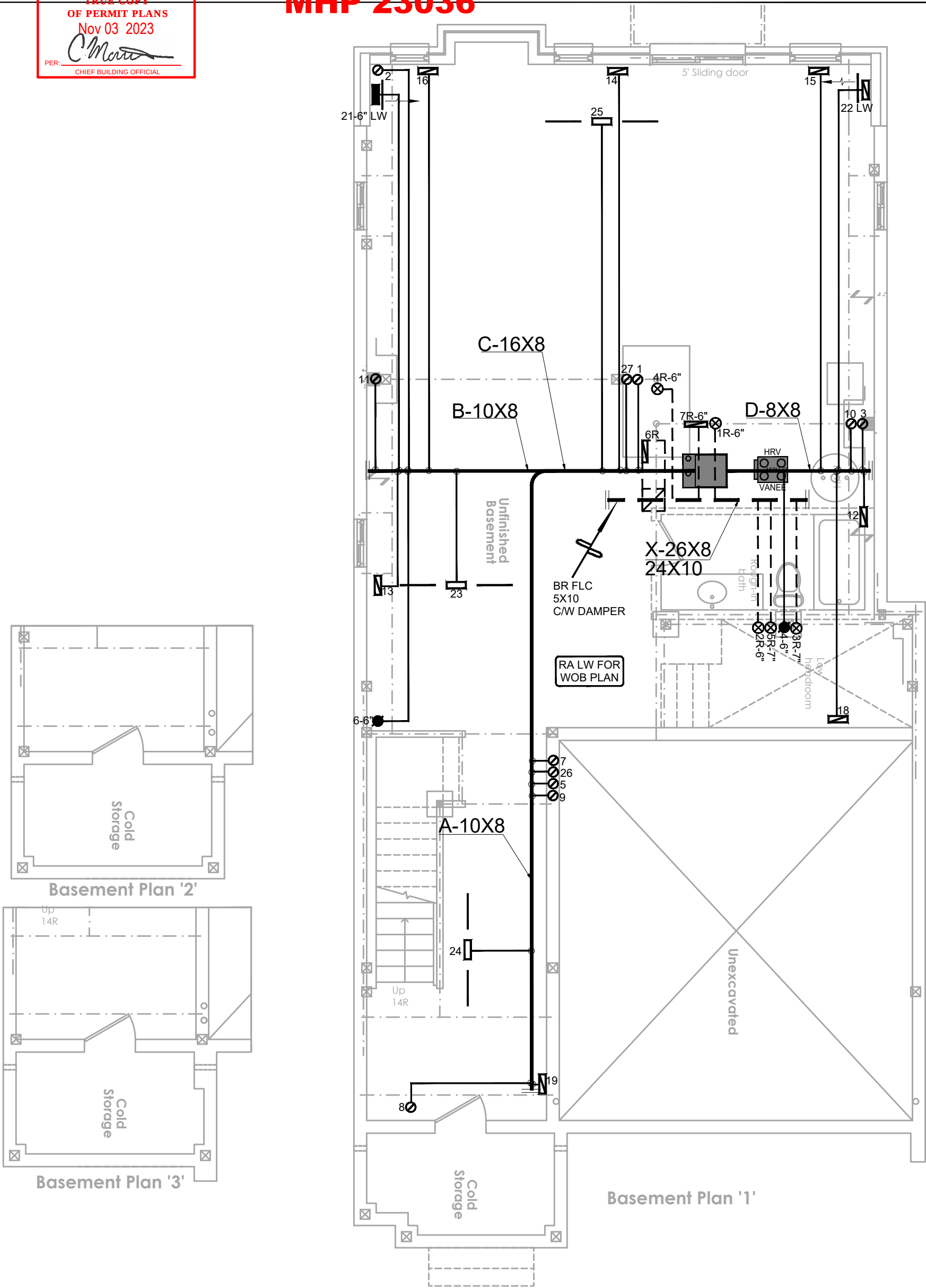
Air Infiltration Residential Load Calculator

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):	1076.4			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1434.9 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			

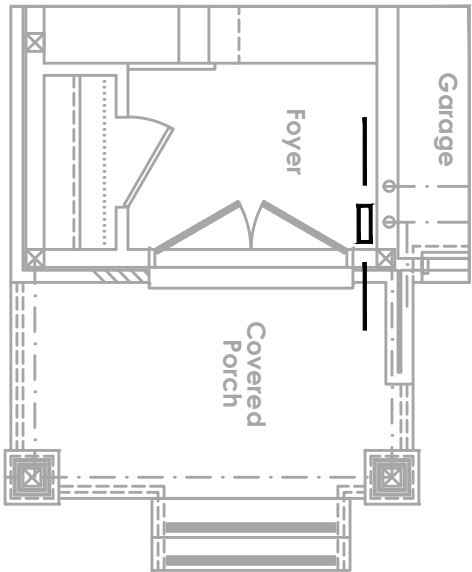
TYPE: VILLA 5
 LO# 101810

WOB

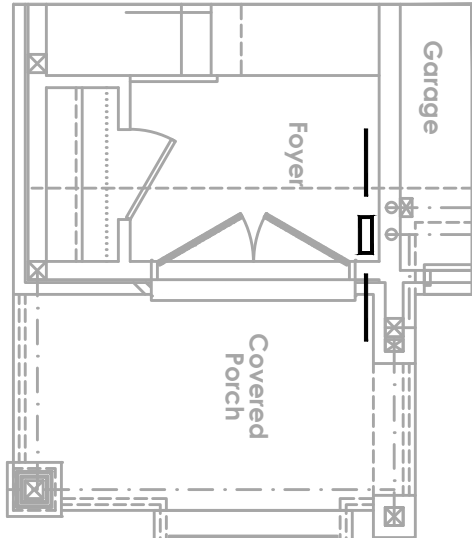


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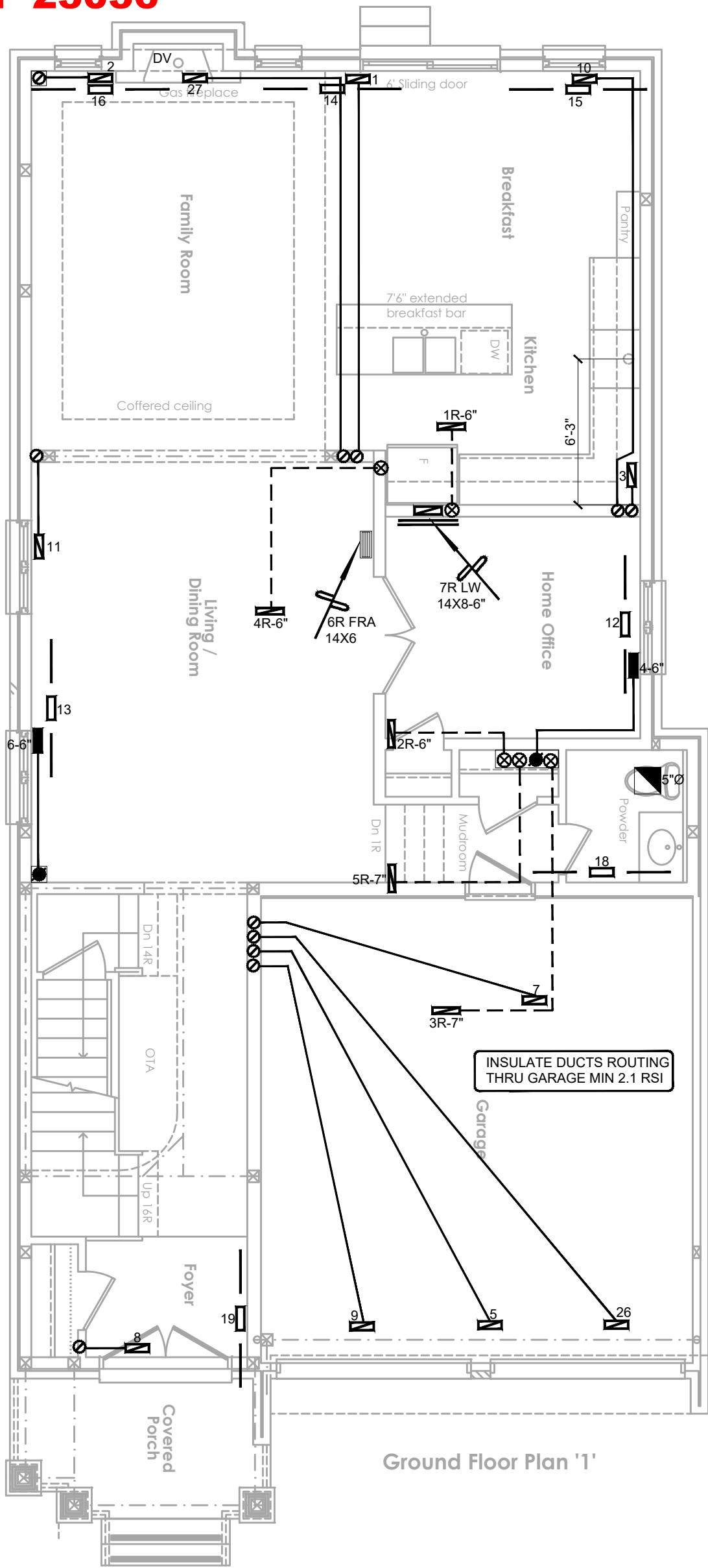
HVAC LEGEND								3.			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.			
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.			
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN 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		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.				HEAT LOSS 51382 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS		Sheet Title	
Project Name ZADORRA OSHAWA, ONTARIO						MAKE GOODMAN		3RD FLOOR		BASEMENT HEATING LAYOUT	
						MODEL GMEC960603BNA		2ND FLOOR 13 5 4			
						INPUT 60.0 MBTU/H		1ST FLOOR 7 2 2			
WOB VILLA 5		OUTPUT 57.6 MBTU/H		BASEMENT 5 1 0		Date JULY/2023					
		COOLING 2.5 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 928 cfm @ 0.6" w.c.				BCIN# 19669					
2834 sqft								LO# 101810			



Ground Floor Plan '2'



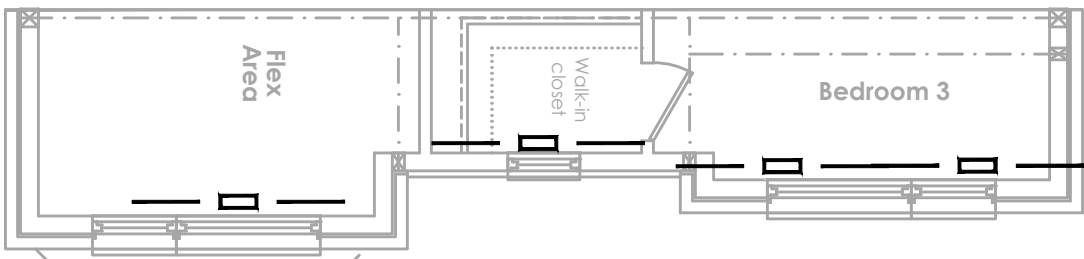
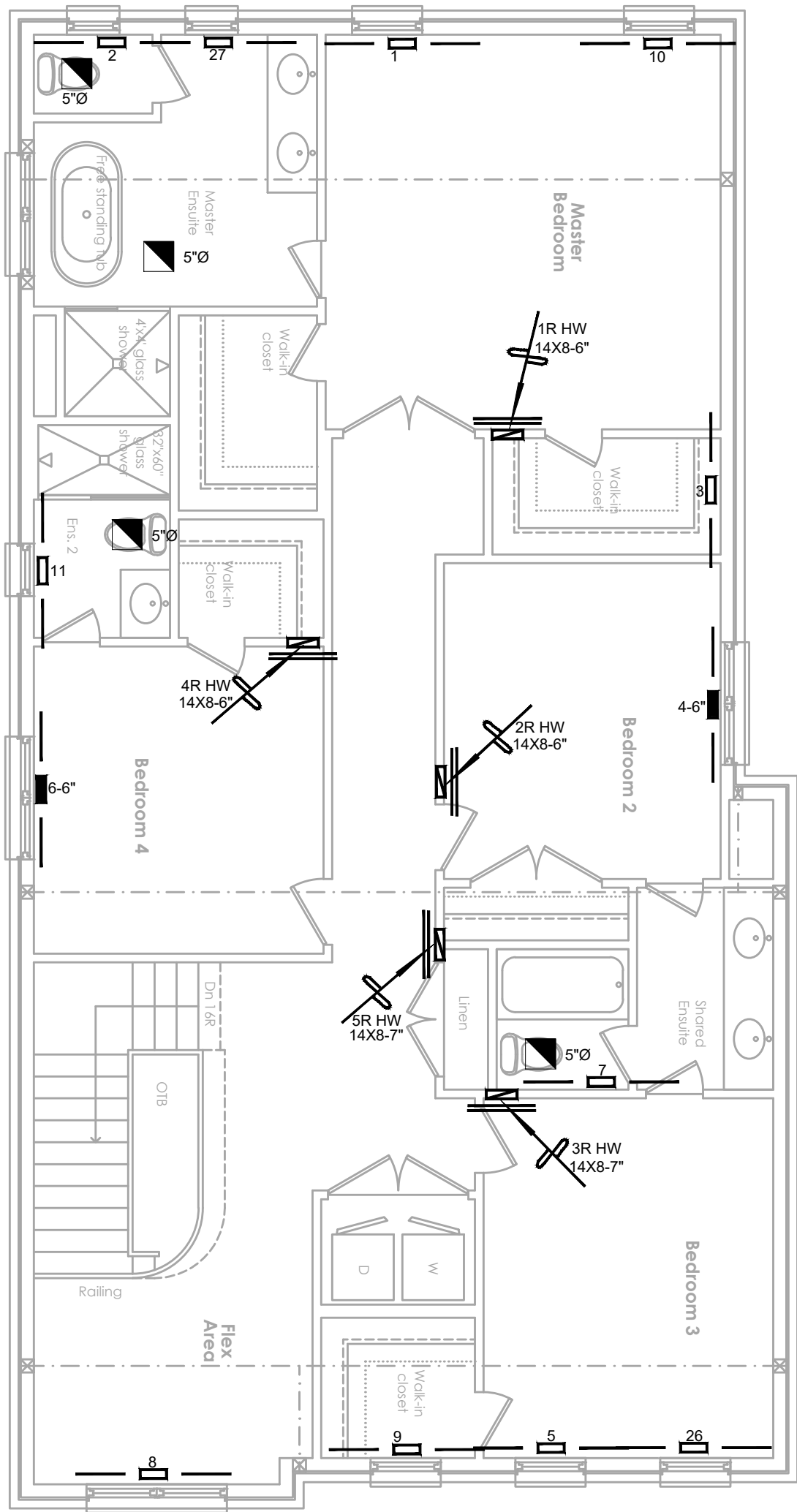
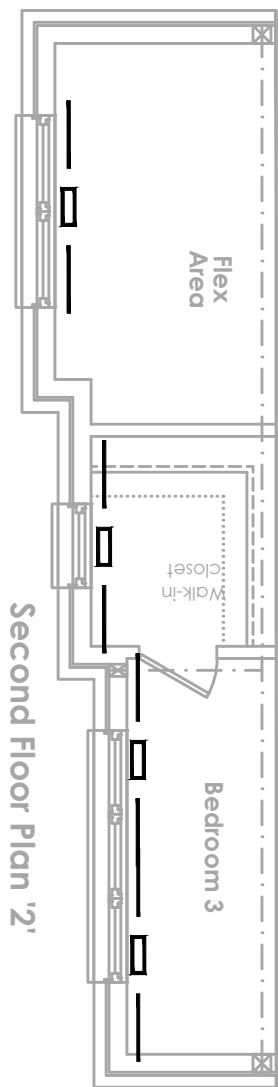
Ground Floor Plan '3'



Ground Floor Plan '1'

WOB

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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GREENPARK HOMES								FIRST FLOOR HEATING LAYOUT		
Project Name								Date		
ZADORRA OSHAWA, ONTARIO								JULY/2023		
WOB VILLA 5								Scale		
2834 sqft		3/16" = 1'-0"		BCIN# 19669						
				LO#						
				101810						



WOB

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.		
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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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Michael O'Rourke
Michael O'Rourke BCIN # 19669
HVAC Designs Ltd.

PACKAGE A1

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GREENPARK HOMES			SECOND FLOOR	
Project Name			HEATING	
ZADORRA			LAYOUT	
OSHAWA, ONTARIO			Date	JULY/2023
WOB		Scale	3/16" = 1'-0"	
VILLA 5		BCIN# 19669		
2834 sqft		LO#	101810	
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.				