HVAC DESIGNS LTD.
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

MHP 23033

SITE NAME: ZADORRA ESTATES INC — WOB — PLAN: [illegible]-23 — WINTER NATURAL AIR CHANGE RATE 0.365 — HEAT LOSS ΔT °F. 74 — CSA-F280-12
BUILDER: GREENPARK HOMES — BLK: 25 — LOT: [illegible] — SUMMER NATURAL AIR CHANGE RATE 0.100 — HEAT GAIN ΔT °F. 11 — SB-12 PACKAGE A1

ROOM USE			MBR			BED-2			BED-3			BED-4			BATH			HALL		
EXP. WALL			32			13			29			30			6			14		
CLG. HT.			9			9			9			9			9			9		
FACTORS																				
GRS.WALL AREA	LOSS	GAIN	291			191			64			118			264			273			55			127		
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	7	145	108	0	0	0	10	208	155	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	45	935	1847	39	810	1601	0	0	0	0	0	0
SOUTH	20.8	24.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	374	439
WEST	20.8	41.0	20	416	821	16	332	657	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	271	1182	175	168	732	109	64	278	41	108	472	70	219	954	141	234	1020	151	55	238	35	109	477	71
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	278	348	155	158	198	88	66	83	37	146	183	81	129	162	72	140	175	78	90	113	50	237	297	132
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	51	137	61	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	180	448	66	27	67	10	64	159	24	52	129	19
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				1945			1408			360			863			2635			2072			510			1277	
SUB TOTAL HT GAIN					1151			962			78			306			2188			1840			109			661
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		0.20	0.26	
AIR CHANGE HEAT LOSS				511			370			95			227			692			545			134			336	
AIR CHANGE HEAT GAIN					59			49			4			16			112			94			6			34
DUCT LOSS				0			0			0			0			333			262			64			161	
DUCT GAIN					0			0			0			0			306			269			11			69
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					517			0			0			517			517			517			0			0
TOTAL HT LOSS BTU/H				2457			1778			455			1089			3661			2879			708			1774	
TOTAL HT GAIN x 1.3 BTU/H					2869			1314			106			1403			4371			3849			164			994

ROOM USE			DIN			KT/BF			FAM			PWD			FOY			MUD			WOB			BAS		
EXP. WALL			30			32			29			10			33			23			38			116		
CLG. HT.			10			10			10			10			10			10			9			9		
FACTORS																										
GRS.WALL AREA	LOSS	GAIN	303			323			293			101			333			232			323			638		
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	0	0	0	0	0	0	0	3	62	46
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	22	457	903	0	0	0	0	0	0	0	0	0
SOUTH	20.8	24.4	25	519	610	0	0	0	0	0	0	7	145	171	0	0	0	0	0	0	0	0	0	3	62	73
WEST	20.8	41.0	0	0	0	58	1205	2381	22	457	903	0	0	0	0	0	0	0	0	0	58	1205	2381	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	22	431	64	21	411	61	0	0	0	21	411	61
NET EXPOSED WALL	4.4	0.6	278	1211	180	265	1155	171	271	1180	175	94	410	61	289	1260	187	211	921	136	265	1155	171	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	348	1223	181
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0						2127	
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			457				
SUBTOTAL HT LOSS				1731			2360			1637			555			2148			1332			2817			3886	
SUB TOTAL HT GAIN					789			2552			1078			231			1154			197			2552			362
LEVEL FACTOR / MULTIPLIER			0.30	0.45		0.30	0.45		0.30	0.45		0.30	0.45		0.30	0.45		0.30	0.45					0.50	1.09	
AIR CHANGE HEAT LOSS				773			1055			732			248			960			595						7273	
AIR CHANGE HEAT GAIN					40			130			55			12			59			10							149
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	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					517			517			517			0			0			0			0			517
TOTAL HT LOSS BTU/H				2504			3415			2369			803			3108			1927			2817			11159	
TOTAL HT GAIN x 1.3 BTU/H					1751			4160			2145			316			1577			270			3318			1336

TOTAL HEAT GAIN BTU/H: 30178 TONS: 2.51 LOSS DUE TO VENTILATION LOAD BTU/H: 1593 STRUCTURAL HEAT LOSS: 42903 TOTAL COMBINED HEAT LOSS BTU/H: 44496

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

Michael O'Rourke

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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CORPORATION OF THE CITY OF OSHAWA
TRUE COPY
OF PERMIT PLANS
Nov 21 2023
PER:
CHIEF BUILDING OFFICIAL

MHP 23033

SITE NAME: ZADORRA ESTATES INC
BUILDER: GREENPARK HOMES

WOB
TYPE: [illegible]
DATE: Jul-23
GFA: 2258
LO# 101804

HEATING CFM	928	COOLING CFM	[illegible]	furnace pressure	[illegible]
TOTAL HEAT LOSS	42,903	TOTAL HEAT GAIN	[illegible]	furnace filter	0.05
AIR FLOW RATE CFM	21.63	AIR FLOW RATE CFM	30.99	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	1131

AFUE = 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	12	8	5
R/A	0	0	5	1	1

plenum pressure s/a	0.18	r/a pressure	0.17
max s/a dif press. loss	0.01	r/a grille press. Loss	0.02
min adjusted pressure s/a	0.17	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	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	HALL	BED-3	MBR	BED-4	ENS	DIN	KT/BF	KT/BF	FAM	FAM	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.23	0.89	0.45	1.09	1.83	1.44	0.71	1.77	1.83	1.23	1.44	0.89	2.50	1.71	1.71	1.18	1.18	0.80	3.11	1.93	2.80	2.80	2.80	2.80
CFM PER RUN HEAT	27	19	10	24	40	31	15	38	40	27	31	19	54	37	37	26	26	17	67	42	60	60	60	60
RM GAIN MBH.	1.43	0.66	0.11	1.40	2.19	1.92	0.16	0.99	2.19	1.43	1.92	0.66	1.75	2.08	2.08	1.07	1.07	0.32	1.58	0.27	0.93	0.93	0.93	0.93
CFM PER RUN COOLING	44	20	3	43	68	60	5	31	68	44	60	20	54	64	64	33	33	10	49	8	29	29	29	29
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	0.17	0.17
ACTUAL DUCT LGH.	43	49	39	32	45	52	43	38	47	28	65	31	16	16	23	31	20	35	36	20	39	25	16	38
EQUIVALENT LENGTH	160	160	150	160	120	140	170	130	140	100	180	140	140	110	110	160	130	140	110	140	190	140	120	130
TOTAL EFFECTIVE LENGTH	203	209	189	192	165	192	213	168	187	128	245	171	156	126	133	191	150	175	146	160	229	165	136	168
ADJUSTED PRESSURE	0.08	0.08	0.09	0.09	0.1	0.09	0.08	0.1	0.09	0.13	0.07	0.1	0.11	0.14	0.13	0.09	0.11	0.1	0.12	0.11	0.08	0.1	0.13	0.1
ROUND DUCT SIZE	5	4	4	**6**	5	**6**	4	4	5	4	**6**	4	5	5	5	4	4	4	5	4	5	5	5	5
HEATING VELOCITY (ft/min)	198	218	115	122	294	158	172	436	294	310	158	218	396	272	272	298	298	195	492	482	441	441	441	441
COOLING VELOCITY (ft/min)	323	229	34	219	499	306	57	356	499	505	306	229	396	470	470	379	379	115	360	92	213	213	213	213
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	B	A	D	B	D	C	D	D	D	B	C	B	B	A	A	A	A	C	C	B	A	A	B	C

RUN #	25
ROOM NAME	BAS
RM LOSS MBH.	2.80
CFM PER RUN HEAT	60
RM GAIN MBH.	0.93
CFM PER RUN COOLING	29
ADJUSTED PRESSURE	0.17
ACTUAL DUCT LGH.	33
EQUIVALENT LENGTH	180
TOTAL EFFECTIVE LENGTH	213
ADJUSTED PRESSURE	0.08
ROUND DUCT SIZE	5
HEATING VELOCITY (ft/min)	441
COOLING VELOCITY (ft/min)	213
OUTLET GRILL SIZE	3X10
TRUNK	A

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	325	0.08	9.2	10	x	8	585
TRUNK B	578	0.08	11.4	16	x	8	650
TRUNK C	206	0.07	8	8	x	8	464
TRUNK D	349	0.07	9.8	12	x	8	524
TRUNK E	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0
TRUNK G	0	0.00	0	0	x	8	0
TRUNK H	0	0.00	0	0	x	8	0
TRUNK I	0	0.00	0	0	x	8	0
TRUNK J	0	0.00	0	0	x	8	0
TRUNK K	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	0.06	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	581	0.06	12.3	18	x	8	581
TRUNK Z	170	0.06	7.8	8	x	8	383
DROP	928	0.06	14.7	24	x	10	557

RETURN AIR #	1	2	3	4	5	6										**BR**
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	98	99	85	85	85	326	0	0	0	0	0	0	0	0	0	150
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.	33	29	55	64	52	31	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	135	140	195	200	190	185	0	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	168	169	250	264	242	216	1	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.09	0.09	0.06	0.06	0.06	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	5.7	5.7	6	6	6	9.5	0	0	0	0	0	0	0	0	0	6.5
INLET GRILL SIZE	8	8	8	8	8	8	0	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	30	0	0	0	0	0	0	0	0	0	14

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INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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MHP 23033

TYPE: VILLA 1
SITE NAME: ZADORRA ESTATES INC

RESIDENTIAL 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	4	@ 10.6 cfm	42.4	cfm
Other Rooms	3	@ 10.6 cfm	31.8	cfm
Table 9.32.3.A.		TOTAL	148.4 ✓	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	148.4	cfm
Less Principal Ventil. Capacity	79.5 ✓	cfm
Required Supplemental Capacity	68.9	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
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 @ 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: Michael O'Rourke

HRAI # 001820

Date: July-23

I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

INDIVIDUAL BCIN: 19669 Michael O'Rourke MICHAEL O'ROURKE

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MHP 23033

CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 101804 Model: VILLA 1 Builder: GREENPARK HOMES Date: 2023-07-14

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	980	9	8330
First	980	10	9898
Second	1298	9	11811.8
Third	0	9	0
Fourth	0	9	0
		Total:	30,039.8 ft³
		Total:	850.6 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.365
SUMMER NATURAL AIR CHANGE RATE	0.100

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

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

0.365 x 236.29 x 41 °C x 1.2 = 4263 W

= **14546 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.100 x 236.29 x 6 °C x 1.2 = 174 W

= **593 Btu/h**

5.2.3.2 Heat Loss due to Mechanical 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**

6.2.7 Sensible heat Gain due to Ventilation

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

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)

$$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$$

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	14,546	6,702	1.085
2	0.3		9,764	0.447
3	0.2		11,071	0.263
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

Michael O'Rourke
BCIN# 19669

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HEAT LOSS AND GAIN SUMMARY SHEET

MHP 23033

MODEL: VILLA 1
SFQT: 2258
LO#
BUILDER: 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 (ft^3):	30039.8	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft^2):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	5.5 ft
LENGTH: 49.0 ft	WIDTH: 28.0 ft	EXPOSED PERIMETER:	116.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	38.0 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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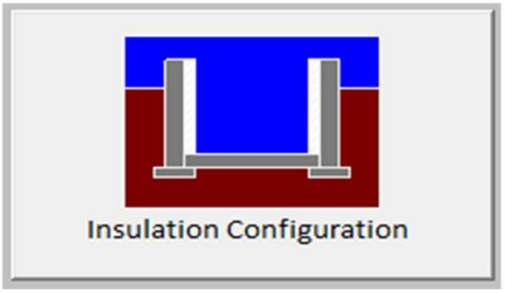
Ajax ON, L1S 2E2
905-619-2300

MHP 23033

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):	**8.5**	
Exposed Perimeter (m):	**35.4**	
Wall Height (m):	**2.6**	
Depth Below Grade (m):	**1.39**	
Window Area (m^2):	**0.6**	
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):	**623**	

TYPE: VILLA 1 WOB
LO# 101804

Michael O'Rourke BCIN #19669

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375 Finley Ave, Suite 202
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905-619-2300

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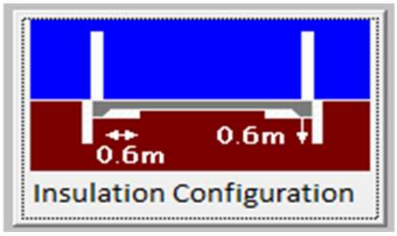
Nov 21 2023
PER: _____
CHIEF BUILDING OFFICIAL

MHP 23033

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):	**8.5**
Exposed Perimeter (m):	**11.6**
Radiant Slab	
Heated Fraction of the Slab:	**0**
Fluid Temperature (°C):	**33**
Design Months	
Heating Month	**1**
Results	
Heating Load (Watts):	**134** ✓



TYPE: VILLA 1 WOB
LO# 101804

Michael O'Rourke BCIN# 19669

HVAC DESIGNS LTD.

MHP 23033

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):	8.44

Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	850.6

Air Leakage/Ventilation		
Air Tightness Type:	Present (1961-) (3.57 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1133.9 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):	**0.365**
Cooling Air Leakage Rate (ACH/H):	**0.100**

TYPE: VILLA 1 WOB
LO# 101804

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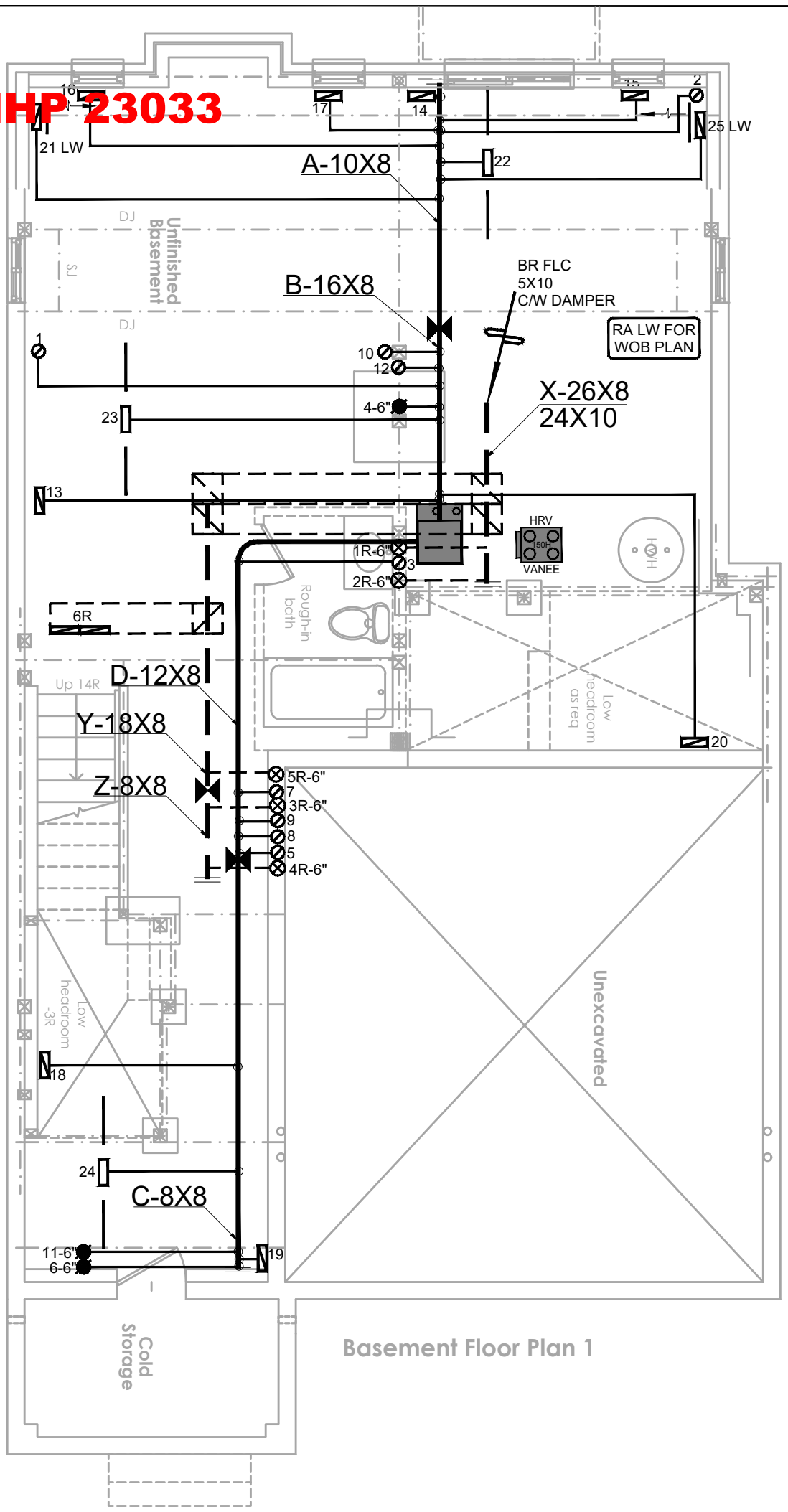
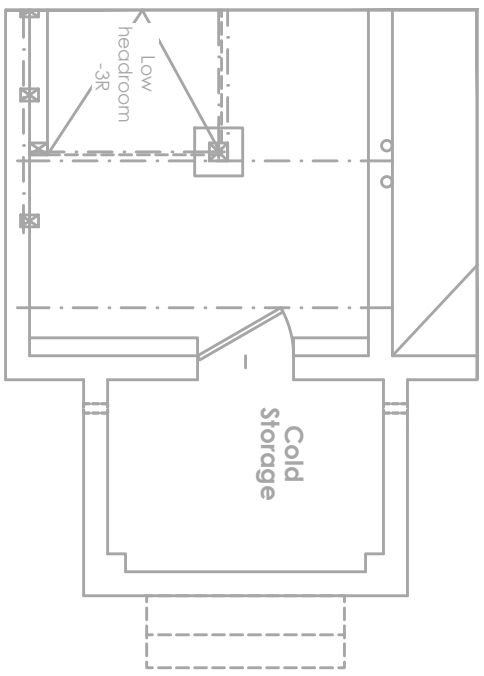
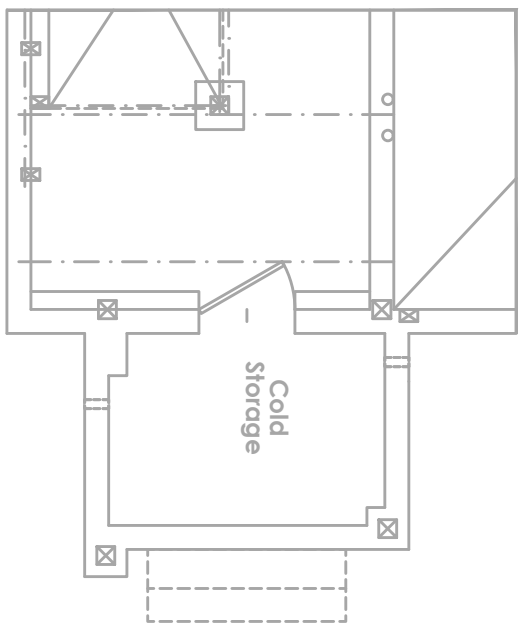


Basement Floor Plan 1



Basement Floor Plan 2



Basement Floor Plan 3

WOB

HVAC LEGEND							
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

No.	Description	Date
3.		
2.		
1.		

REVISIONS

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

Client
GREENPARK HOMES

Project Name
ZADORRA
OSHAWA, ONTARIO

WOB
VILLA 1 2258 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@hvacdesigns.ca
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Specializing in Residential Mechanical Design Services

Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

HEAT LOSS 44496 BTU/H UNIT DATA		
MAKE	GOODMAN	
MODEL	GMEC960603BNA	
INPUT	60.0	MBTU/H
OUTPUT	57.6	MBTU/H
COOLING	2.5	TONS
FAN SPEED	928	cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	12	5	3
1ST FLOOR	8	1	3
BASEMENT	5	1	0

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

Sheet Title
BASEMENT HEATING LAYOUT

Date JULY/2023
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 101804

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Nov 21 2023
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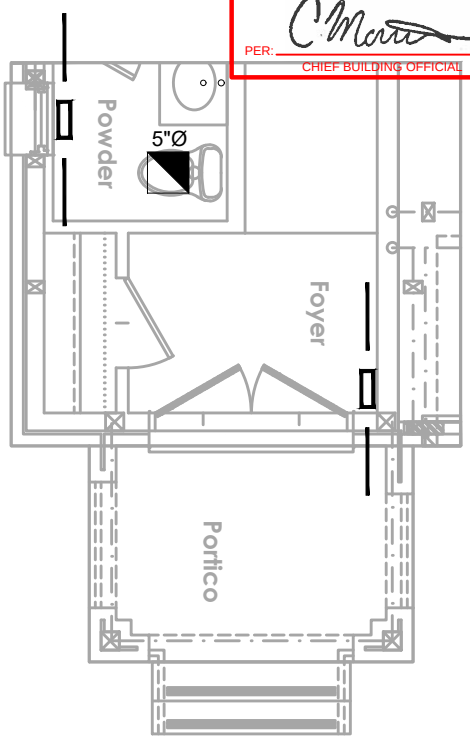
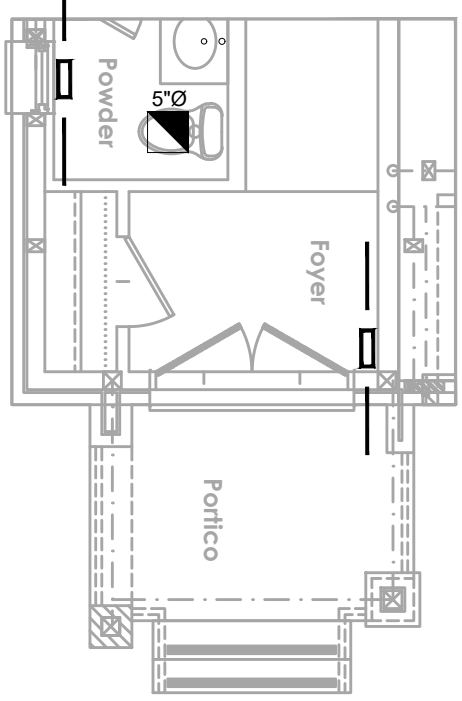
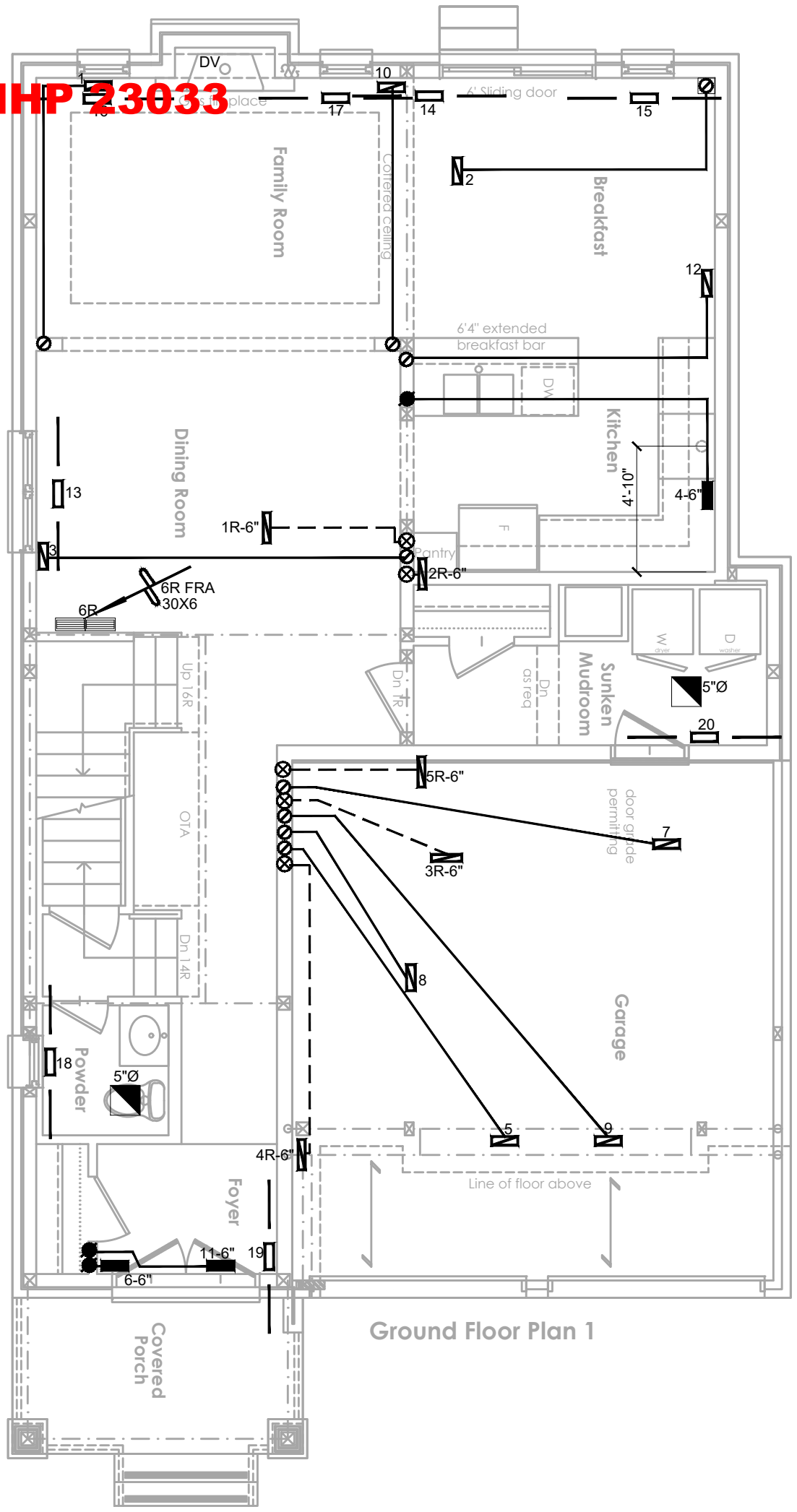


Ground Floor Plan 2



Ground Floor Plan 3



Ground Floor Plan 1

WOB

HVAC LEGEND							
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

No.	Description	Date
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REVISIONS

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VILLA 1 2258 sqft

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Sheet Title
FIRST FLOOR HEATING LAYOUT

Date JULY/2023
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 101804

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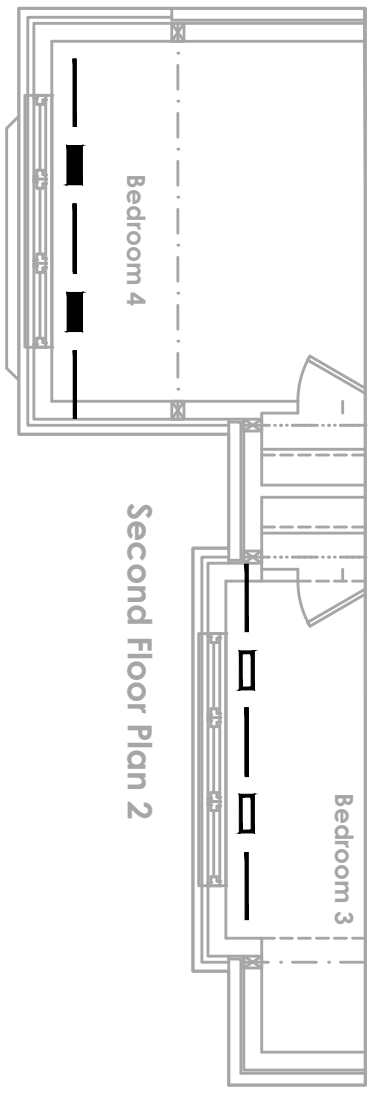
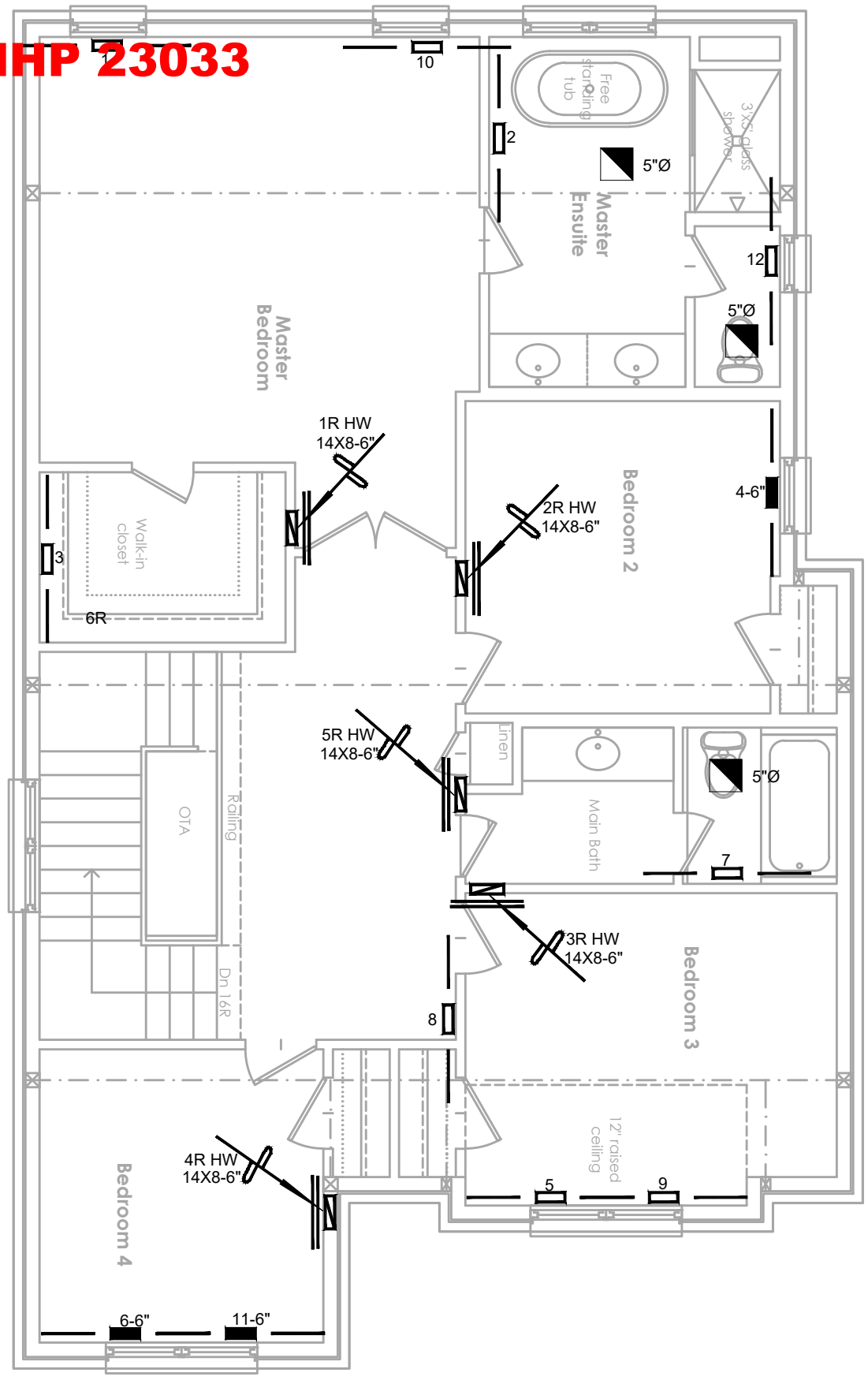
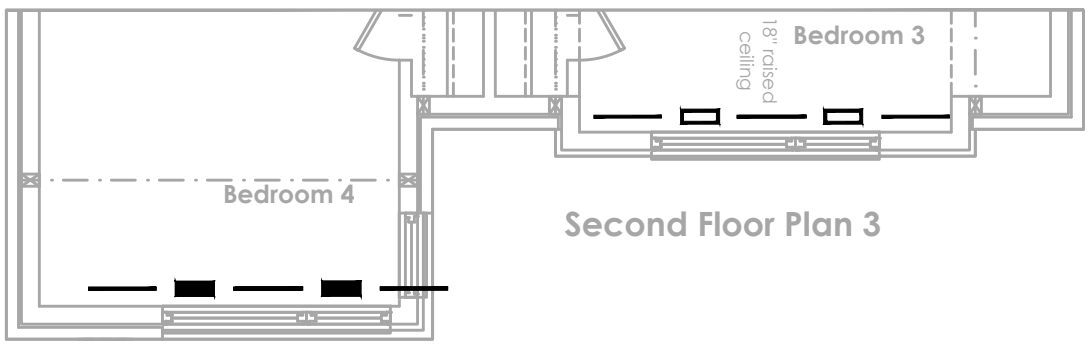




Second Floor Plan 1



Second Floor Plan 3

WOB

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

No.	Description	Date
3.		
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REVISIONS

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PACKAGE A1

Client
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Project Name
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WOB
VILLA 1 2258 sqft

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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date JULY/2023
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 101804