HVAC DESIGNS LTD.
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MHP 23028

SITE NAME: ZADORRA ESTATES INC — WOB — DATE: Jul-23 — WINTER NATURAL AIR CHANGE RATE 0.365 — HEAT LOSS ΔT °F. 74 — CSA-F280-12
BUILDER: GREENPARK HOMES — TYPE: ROSE 2 — GFA: 3005 — LO# 101735 — SUMMER NATURAL AIR CHANGE RATE 0.100 — HEAT GAIN ΔT °F. 11 — SB-12 PACKAGE A1

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			S-BATH			FLEX				ENS-2				
EXP. WALL			34			24			0			27			36			18			6			14				6				
CLG. HT.			9			9			0			9			9			9			9			9				9				
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	309			216			0			246			328			164			55			127				55				
GLAZING				LOSS	GAIN		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	0	0	0		0	0	0		
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	44	914	1806	49	1018	2011	0	0	0	0	0	0	15	312	616		0	0	0		
SOUTH	20.8	24.4	0	0	0	7	145	171	0	0	0	0	0	0	0	0	0	16	332	390	7	145	171	0	0	0		0	0	0		
WEST	20.8	41.0	22	457	903	16	332	657	0	0	0	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		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		0	0	0		
NET EXPOSED WALL	4.4	0.6	287	1252	186	195	851	126	0	0	0	202	879	130	279	1214	180	148	644	95	48	207	31	112	490	73		55	238	35		
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		
EXPOSED CLG	1.3	0.6	402	504	224	145	182	81	29	36	16	181	227	101	211	264	118	195	244	109	75	94	42	313	392	174		55	69	31		
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	18	48	21	0	0	0	0	0	0	0	0	0		0	0	0		
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	29	72	11	181	451	67	0	0	0	0	0	0	0	0	0	138	344	51		55	137	20		
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0			0				0				
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			0				0				
SUBTOTAL HT LOSS				2213			1511			109			2470			2545			1221			447			1537				444				
SUB TOTAL HT GAIN					1313			1035			27			2104			2330			594			243			914				86			
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	0.30		0.20	0.30			0.20	0.30			
AIR CHANGE HEAT LOSS				662			452			32			739			761			365			134			460				133				
AIR CHANGE HEAT GAIN					72			57			1			116			128			33			13			50				5			
DUCT LOSS				0			0			14			321			0			0			0			200				58				
DUCT GAIN					0			0			3			330			0			0			0			96				9			
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0	0		0		0		0			
HEAT GAIN APPLIANCES/LIGHTS					839			0			0			839			839			839			0			0				0			
TOTAL HT LOSS BTU/H				2875			1963			155			3530			3306			1586			580			2197				634				
TOTAL HT GAIN x 1.3 BTU/H					3515			1419			41			4717			4599			2218			334			1378				130			

ROOM USE			H-OFF			DIN			KT/BF			FAM			LAUN			PWD			FOY			MUD				WOB			BAS		
EXP. WALL			10			32			37			34			7			12			31			15				44			130		
CLG. HT.			10			10			10			10			9			10			10			10				9			9		
	FACTORS																																
GRS.WALL AREA	LOSS	GAIN	101			323			374			343			64			121			313			152				374			715		
GLAZING				LOSS	GAIN		LOSS	GAIN		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	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	0	0	0	11	229	452	22	457	903	0	0	0		0	0	0	0	0	0
SOUTH	20.8	24.4	22	457	537	29	603	707	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		6	125	146	0	0	0
WEST	20.8	41.0	0	0	0	0	0	0	52	1080	2134	22	457	903	0	0	0	0	0	0	0	0	0	0	0	0		60	1247	2463	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
DOORS	19.6	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	313	46	21	411	61		0	0	0	21	411	61
NET EXPOSED WALL	4.4	0.6	79	344	51	294	1282	190	322	1402	208	321	1400	208	64	278	41	110	480	71	275	1199	178	131	569	84		308	1342	199	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	390	1370	203
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	60	75	33	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		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		0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0			0							2427 ✓	
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			0				573 ✓				
SUBTOTAL HT LOSS				801			1884			2482			1857			353			709			1969			980				3286			4208	
SUB TOTAL HT GAIN					588			897			2342			1111			75			523			1127			145				2808			264
LEVEL FACTOR / MULTIPLIER			0.30	0.54		0.30	0.54		0.30	0.54		0.30	0.54		0.20	0.30		0.30	0.54		0.30	0.54		0.30	0.54						0.50	1.28	
AIR CHANGE HEAT LOSS				432			1017			1339			1002			105			382			1062			529							9607	
AIR CHANGE HEAT GAIN					32			49			129			61			4			29			62			8								169
DUCT LOSS				0			0			0			0			0			0			0			0							0	
DUCT GAIN					0			0			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		0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					839			839			839			839			839			0			0			0				0				839
TOTAL HT LOSS BTU/H				1234			2901			3821			2860			458			1091			3031			1508				3286			13815	
TOTAL HT GAIN x 1.3 BTU/H					1897			2322			4303			2614			1193			717			1546			199				3651				1654

TOTAL HEAT GAIN BTU/H: 38683 TONS: 3.22 LOSS DUE TO VENTILATION LOAD BTU/H: 1593 STRUCTURAL HEAT LOSS: 50832 TOTAL COMBINED HEAT LOSS BTU/H: 52424

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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MHP 23028

SITE NAME: ZADORRA ESTATES INC
BUILDER: GREENPARK HOMES
TYPE: ROSE 2
DATE: Jul-23
GFA: 3005 LO# 101735

HEATING CFM 1131 | COOLING CFM 1131 | furnace pressure 0.6
TOTAL HEAT LOSS 50,832 | TOTAL HEAT GAIN 38,447 | furnace filter 0.05
AIR FLOW RATE CFM 22.25 | AIR FLOW RATE CFM 2 | a/c coil pressure 0.2
ilable 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 = **1131**
CFM @ .6 " E.S.P.

RUN COUNT	4th	3rd	2nd	1st	
S/A	0	0	14	8	5
R/A	0	0	5	2	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

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	S-BATH	FLEX	BED-2	MBR	ENS-2	H-OFF	DIN	KT/BF	KT/BF	FAM	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.44	0.98	0.16	1.77	1.65	1.59	0.58	2.20	1.77	1.44	0.63	1.23	2.90	1.91	1.91	2.86	0.46	1.09	3.03	1.51	3.42	3.42	3.42	3.42
CFM PER RUN HEAT	32	22	3	39	37	35	13	49	39	32	14	27	65	43	43	64	10	24	67	34	76	76	76	76
RM GAIN MBH.	1.76	0.71	0.04	2.36	2.30	2.22	0.33	1.38	2.36	1.76	0.13	1.90	2.32	2.15	2.15	2.61	1.19	0.72	1.55	0.20	1.06	1.06	1.06	1.06
CFM PER RUN COOLING	52	21	1	69	68	65	10	41	69	52	4	56	68	63	63	77	35	21	45	6	31	31	31	31
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.	48	43	45	59	71	48	51	57	63	45	51	48	37	36	29	20	35	56	56	17	42	51	24	45
EQUIVALENT LENGTH	180	190	140	170	190	160	170	140	190	180	130	120	120	140	90	130	190	170	140	160	140	130	150	150
TOTAL EFFECTIVE LENGTH	228	233	185	229	261	208	221	197	253	225	181	168	157	176	119	150	225	226	196	177	182	181	174	195
ADJUSTED PRESSURE	0.08	0.07	0.09	0.08	0.07	0.08	0.08	0.09	0.07	0.08	0.1	0.1	0.11	0.1	0.14	0.11	0.08	0.08	0.09	0.1	0.09	0.1	0.1	0.09
ROUND DUCT SIZE	5	4	4	**6**	**6**	**6**	4	5	**6**	5	4	5	5	5	5	**6**	4	4	5	4	5	5	5	5
HEATING VELOCITY (ft/min)	235	252	34	199	189	178	149	360	199	235	161	198	477	316	316	326	115	275	492	390	558	558	558	558
COOLING VELOCITY (ft/min)	382	241	11	352	347	331	115	301	352	382	46	411	499	463	463	393	402	241	330	69	228	228	228	228
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	C	D	C	B	A	D	C	B	B	D	C	B	C	D	E	E	C	A	A	C	D	D	E	B

RUN #	25	26	27
ROOM NAME	BAS	BED-3	ENS
RM LOSS MBH.	3.42	1.65	0.98
CFM PER RUN HEAT	76	37	22
RM GAIN MBH.	1.06	2.30	0.71
CFM PER RUN COOLING	31	68	21
ADJUSTED PRESSURE	0.17	0.17	0.17
ACTUAL DUCT LGH.	53	69	51
EQUIVALENT LENGTH	160	200	130
TOTAL EFFECTIVE LENGTH	213	269	181
ADJUSTED PRESSURE	0.08	0.06	0.1
ROUND DUCT SIZE	**6**	**6**	4
HEATING VELOCITY (ft/min)	388	189	252
COOLING VELOCITY (ft/min)	158	347	241
OUTLET GRILL SIZE	4X10	4X10	3X10
TRUNK	A	A	D

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	241	0.06	8.8	10	x	8	434	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	471	0.06	11.4	16	x	8	530	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	642	0.06	12.8	20	x	8	578	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	306	0.07	9.3	10	x	8	551	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	489	0.07	11.1	14	x	8	629	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	x	8	0

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	x	8	0
TRUNK P	0	0.05	0	0	x	8	0
TRUNK Q	0	0.05	0	0	x	8	0
TRUNK R	0	0.05	0	0	x	8	0
TRUNK S	0	0.05	0	0	x	8	0
TRUNK T	0	0.05	0	0	x	8	0
TRUNK U	0	0.05	0	0	x	8	0
TRUNK V	0	0.05	0	0	x	8	0
TRUNK W	195	0.05	8.6	8	x	8	439
TRUNK X	1131	0.05	16.5	32	x	8	636
TRUNK Y	941	0.05	15.4	28	x	8	605
TRUNK Z	378	0.05	11	14	x	8	486
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	
AIR VOLUME	115	95	88	90	95	100	358	0	0	0	0	0	0	0	0	190
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.	43	66	66	48	73	46	37	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	195	235	190	210	205	230	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	218	261	301	238	283	251	267	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.07	0.06	0.05	0.06	0.05	0.06	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	6.5	6	6.3	6	6.5	6.4	10.3	0	0	0	0	0	0	0	0	7
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	30	0	0	0	0	0	0	0	0	14

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

HVAC DESIGNS LTD.
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MHP 23028

TYPE: ROSE 2 LO # 101735
SITE NAME: ZADORRA ESTATES INC WOB

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES

- 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
S-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 @ 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

HVAC DESIGNS LTD.

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MHP 23028

80-12 Residential Heat Loss and Heat Gain Calculations

...ula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 101735 Model: ~~ROSE 2~~ Builder: GREENPARK HOMES Date: 2023-07-06

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1308	9	11118
First	1308	10	13210.8
Second	1687	9	15351.7
Third	0	9	0
Fourth	0	9	0
		Total:	39,680.5 ft³
		Total:	1123.6 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 312.12 x 41 °C x 1.2 = 5631 W

= **19214 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 312.12 x 6 °C x 1.2 = 229 W

= **783 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	19,214	7,494	1.282
2	0.3		10,682	0.540
3	0.2		12,849	0.299
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

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: ROSE 2 WOB **BUILDER:** GREENPARK HOMES
SFQT: 3005 **LO#** 101735 **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):	39680.5	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft^2):	1.95	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	5.5 ft
LENGTH: 53.0 ft	WIDTH: 34.0 ft	EXPOSED PERIMETER:	130.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	44.0 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	-

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MICHAEL O'ROURKE

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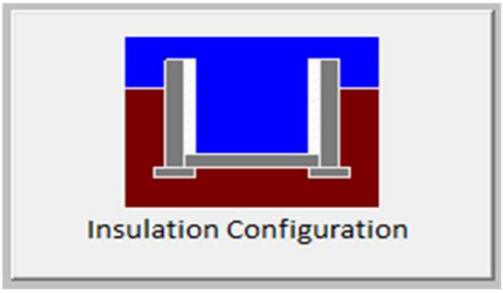
Residential Foundation Thermal Load Calculator

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**	
Floor Width (m):	**10.4**	
Exposed Perimeter (m):	**39.6**	
Wall Height (m):	**2.6**	
Depth Below Grade (m):	**1.41**	
Window Area (m^2):	**0.0**	
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):	**711**	

TYPE: ROSE 2 WOB
LO# 101735

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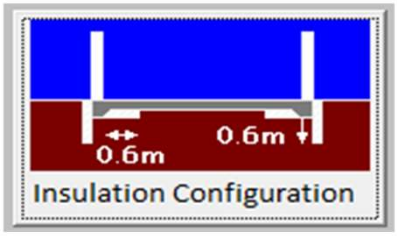
Residential Slab on Grade Thermal Load Calculator

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):	**10.4**	
Exposed Perimeter (m):	**13.4**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Results		
Heating Load (Watts):	**168**	

TYPE: ROSE 2 WOB
LO# 101735

Michael O'Rourke BCIN# 19669

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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):	1123.6

Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.			1497.8 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: ROSE 2 WOB
LO# 101735

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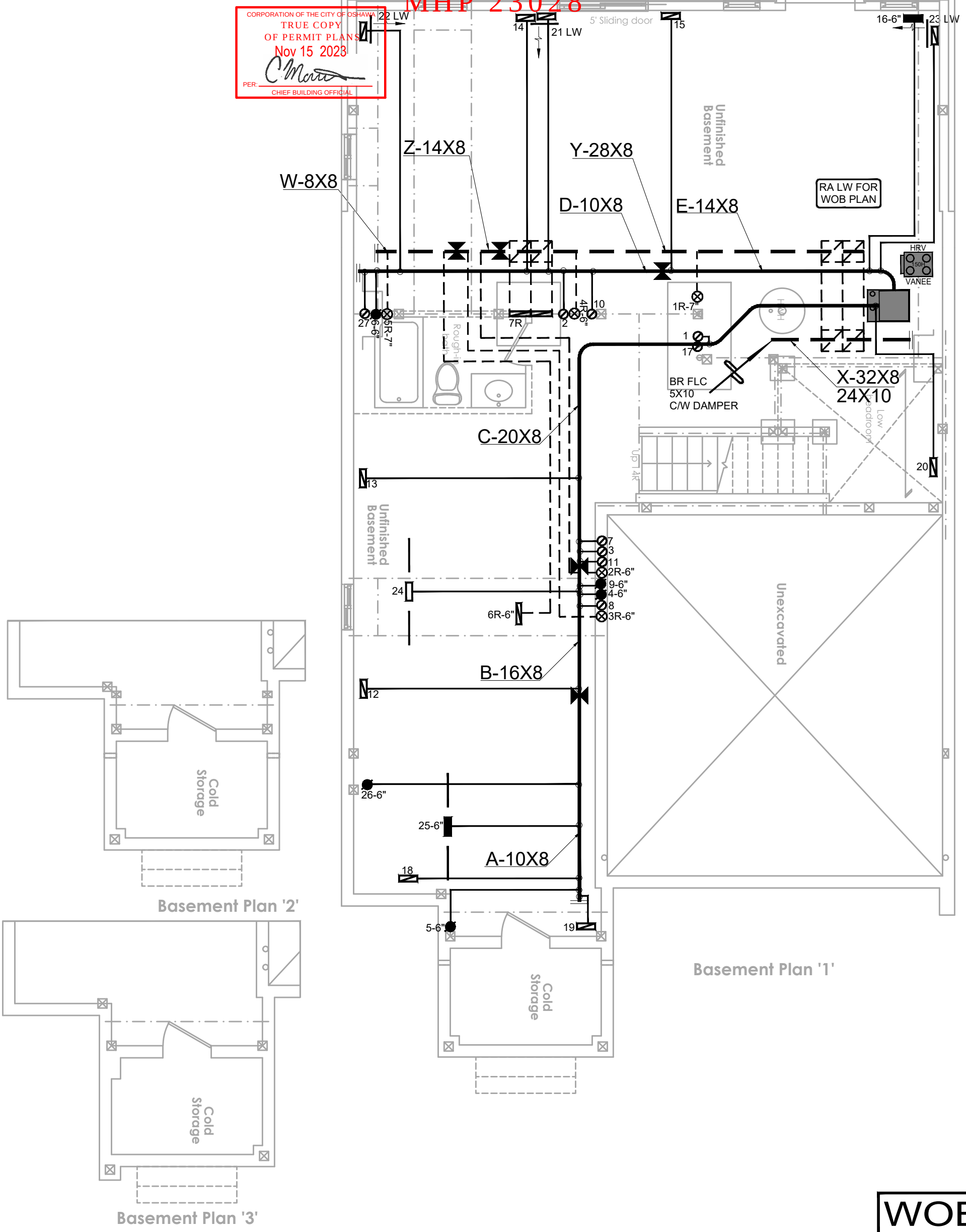

WOB

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
ROSE 2 3005 sqft

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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 52424 BTU/H		
UNIT DATA		
MAKE	GOODMAN	
MODEL	GMEC960603BNA	
INPUT	60.0	MBTU/H
OUTPUT	57.6	MBTU/H
COOLING	3.0	TONS
FAN SPEED	1131	cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	14	5	5
1ST FLOOR	8	2	2
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# 101735

MHP 23028

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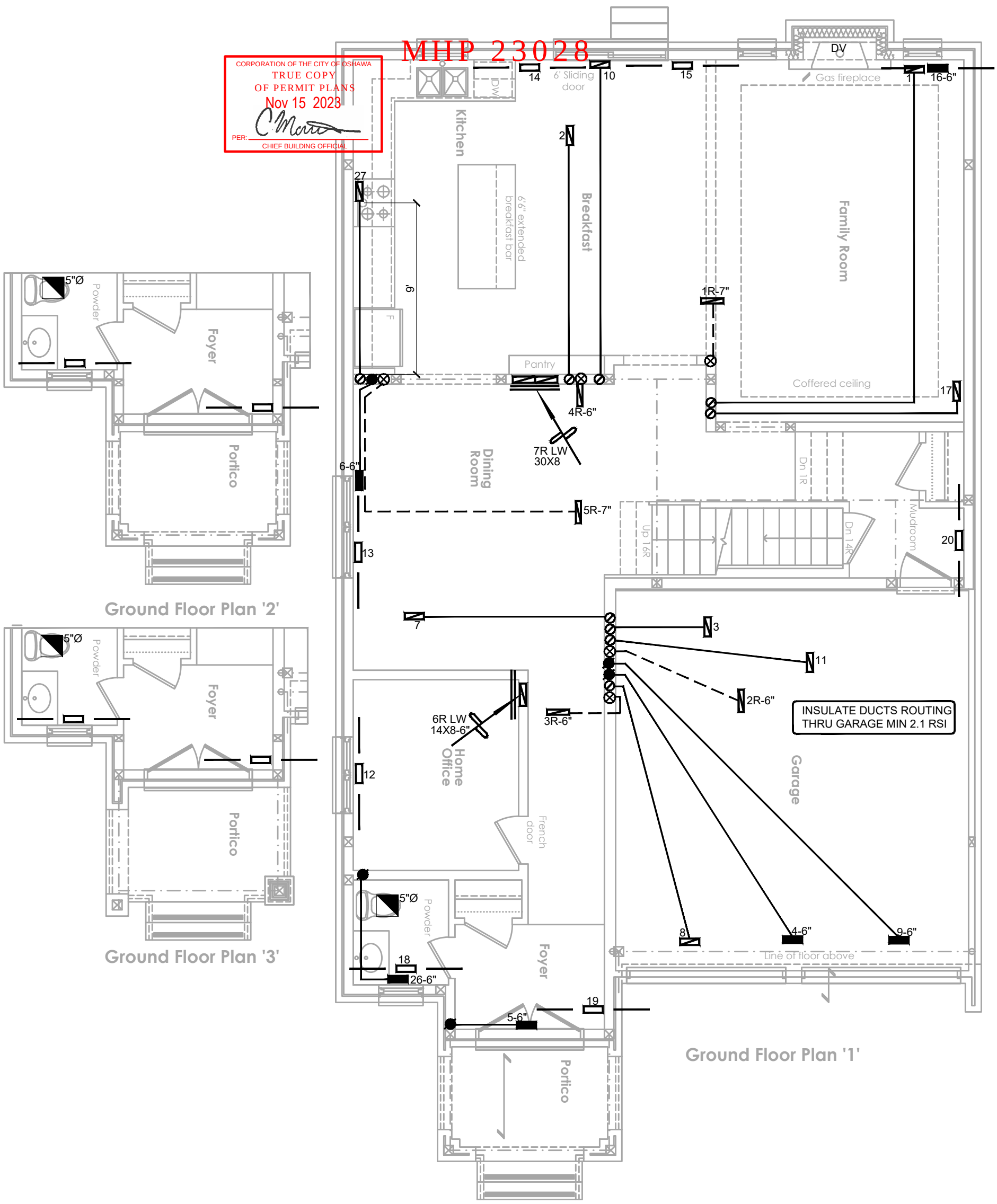

Ground Floor Plan '2'

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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1.		

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ROSE 2 3005 sqft

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Sheet Title
FIRST FLOOR HEATING LAYOUT

Date JULY/2023
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 101735

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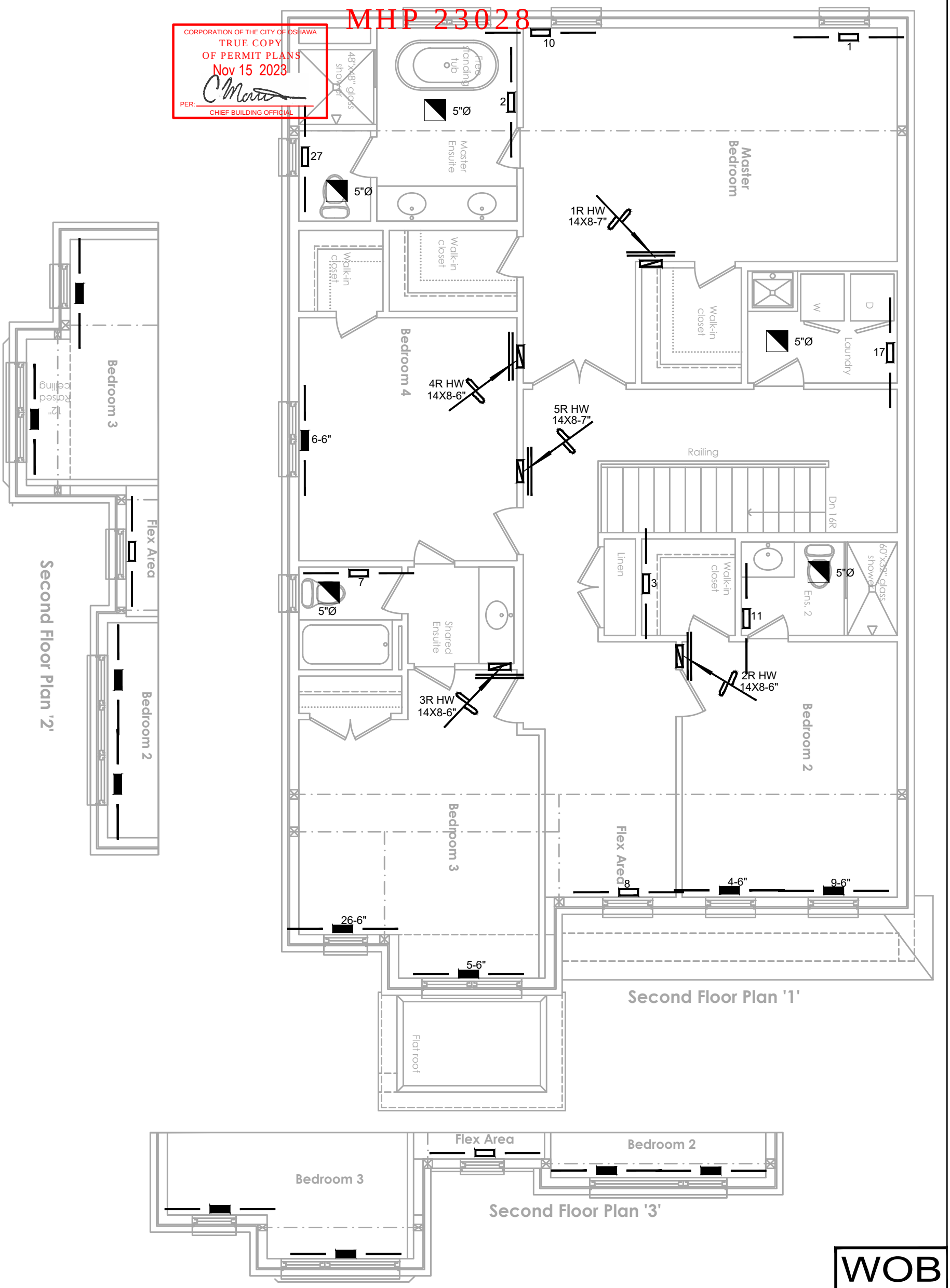

WOB

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

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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date JULY/2023
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 101735