

SITE NAME: TRINIGROUP				OPT 5 BED - WOB												DATE: Sep-23				WINTER NATURAL AIR CHANGE RATE 0.377												HEAT LOSS ΔT °F. 78				CSA-F280-12							
BUILDER: GREENPARK HOMES				TYPE: ROSE 6												GFA: 3175				LO# 102629				SUMMER NATURAL AIR CHANGE RATE 0.118												HEAT GAIN ΔT °F. 13				SB-12 PACKAGE A1			
ROOM USE				MBR			ENS			WIC			BED-2			BED-3			BED-4			S-ENS			ENS-5			BED-5			ENS-4			WIC-2			HALL						
EXP. WALL				35			27			5			12			24			31			3			7			13			8			12			11						
CLG. HT.				9			9			9			9			9			9			9			9			9			10			9									
FACTORS																																											
GRS.WALL AREA		LOSS GAIN		319			246			46			109			218			282			27			64			118			73			121			100						
GLAZING				LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN									
NORTH		21.8	13.3	0	0	0	0	0	0	0	0	0	16	349	213	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
EAST		21.8	33.4	0	0	0	0	0	0	0	0	0	0	0	0	44	958	1470	47	1024	1571	0	0	0	0	0	0	0	13	283	434	16	349	535	0	0	0						
SOUTH		21.8	20.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	152	142	16	349	325	0	0	0	0	0	0	16	349	325					
WEST		21.8	33.4	22	479	735	26	566	869	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					
SKYLT.		38.1	101.5	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	0	0	0	0						
DOORS		20.5	3.4	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	0	0	0	0						
NET EXPOSED WALL		4.6	0.8	297	1355	223	220	1004	165	46	208	34	93	426	70	174	797	131	235	1074	177	27	125	21	57	259	43	102	467	77	60	273	45	105	481	79	84	384	63				
NET EXPOSED BSMT WALL ABOVE GR		3.7	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	0	0	0	0	0	0	0	0	0	0	0					
EXPOSED CLG		1.3	0.6	350	460	206	202	265	119	50	66	29	141	185	83	189	248	111	186	244	109	101	133	59	60	79	35	206	271	121	58	76	34	0	0	0	303	398	178				
NO ATTIC EXPOSED CLG		2.8	1.3	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	0	0					
EXPOSED FLOOR		2.6	0.4	0	0	0	0	0	0	0	0	0	14	37	6	189	493	81	4	10	2	86	225	37	0	0	0	0	0	0	58	151	25	0	0	0	46	120	20				
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					2294			1835			274			996			2497			2353			482			490			1087			784			829			1251					
SUB TOTAL HT GAIN					1164			1153			64			372			1794			1858			117			220			523			538			614			586					
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					710			568			85			308			773			729			149			152			336			243			446			387					
AIR CHANGE HEAT GAIN					91			90			5			29			140			145			9			17			41			42			48			46					
DUCT LOSS					0			0			0			130			327			308			63			0			0			103			0			164					
DUCT GAIN					0			0			0			122			276			283			13			0			0			58			0			63					
HEAT GAIN PEOPLE		240		2	480	0	0	0	0	0	1	240	1	240	1	240	1	240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
HEAT GAIN APPLIANCES/LIGHTS					583			0			0			583			583			583			0			0			583			0			0			0					
TOTAL HT LOSS BTU/H					3004			2404			358			1435			3597			3389			694			642			1423			1129			1275			1802					
TOTAL HT GAIN x 1.3 BTU/H					3012			1615			89			1750			3941			4041			180			309			1491			830			860			904					

ROOM USE		DN/LV	H-OFF	KT/BF	FAM	PWD	FOY	MUD			WOB	BAS
EXP. WALL		21	24	40	31	11	35	5			41	137
CLG. HT.		10	10	10	10	10	10	10			9	9
FACTORS												
GRS.WALL AREA	LOSS GAIN	212	242	404	313	111	354	51			349	754
GLAZING	LOSS GAIN											
NORTH	21.8 13.3	0 0 0	22 479 293	11 240 147	0 0 0	0 0 0	0 0 0	0 0 0			0 0 0	0 0 0
EAST	21.8 33.4	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	22 479 735	0 0 0			0 0 0	0 0 0
SOUTH	21.8 20.3	30 654 610	0 0 0	0 0 0	0 0 0	7 152 142	0 0 0	0 0 0			0 0 0	6 131 122
WEST	21.8 33.4	0 0 0	0 0 0	62 1351 2072	30 654 1002	0 0 0	0 0 0	0 0 0			0 0 0	0 0 0
SKYLT.	38.1 101.5	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
DOORS	20.5 3.4	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	22 452 74	21 431 71			0 0 0	21 431 71
NET EXPOSED WALL	4.6 0.8	182 832 137	220 1007 166	331 1512 249	283 1293 213	104 476 78	310 1414 233	30 135 22			283 1291	212 0 0 0
NET EXPOSED BSMT WALL ABOVE GR	3.7 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	411 1514 249
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	0 0 0
NO ATTIC EXPOSED CLG	2.8 1.3	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	2.6 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
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		1485	1486	3102	1947	628	2345	566			518	2378
SUB TOTAL HT GAIN			747	459	2467	221	1042	93			2418	4454
LEVEL FACTOR / MULTIPLIER	0.30 0.54		0.30 0.54	0.30 0.54	0.30 0.54	0.30 0.54	0.30 0.54	0.30 0.54			0.50 1.44	11104
AIR CHANGE HEAT LOSS		799	799	1668	1047	338	1261	304			0	223
AIR CHANGE HEAT GAIN			58	36	193	17	81	7			0	0
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
HEAT GAIN APPLIANCES/LIGHTS		583	583	583	583	0	0	0			0	583
TOTAL HT LOSS BTU/H		2284	2285	4771	2994	966	3606	870			3247	15557
TOTAL HT GAIN x 1.3 BTU/H		1804	1400	4215	2461	309	1460	130			3143	1622

TOTAL HEAT GAIN BTU/H: 35842

TONS: 2.99

LOSS DUE TO VENTILATION LOAD BTU/H: 1670

STRUCTURAL HEAT LOSS: 57733

TOTAL COMBINED HEAT LOSS BTU/H: 59403



CITY OF RICHMOND HILL
BUILDING DIVISION

05/01/2024

RECEIVED
Per: joshua.nabua

SITE NAME: TRINIGROUP
BUILDER: GREENPARK HOMESOPT 5 BED - WOB
TYPE: ROSE 6

DATE: Sep-23

GFA: 3175 LO# 102629

HEATING CFM 1142 COOLING CFM 1142
TOTAL HEAT LOSS 57,733 TOTAL HEAT GAIN 35,567
AIR FLOW RATE CFM 19.78 AIR FLOW RATE CFM 32.11furnace pressure 0.7
furnace filter 0.14
a/c coil pressure 0.26
available pressure
for s/a & r/a 0.30#GOODMAN
GMEC960803BNA 80AFUE = 96 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = 76,800

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	10	6
R/A	0	0	6	2	1

plenum pressure s/a 0.16
max s/a dif press. loss 0.01
min adjusted pressure s/a 0.15
r/a pressure 0.14
r/a grille press. Loss 0.02
adjusted pressure r/a 0.12MEDLOW
MEDIUM 885
MEDIUM HIGH 1005
HIGH 1142DESIGN CFM = 1142
CFM @ .7" E.S.P.

TEMPERATURE RISE 62 °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-3	BED-4	ENS-5	S-ENS	ENS-4	BED-5	MBR	BED-5	DN/LV	H-OFF	KT/BF	KT/BF	FAM	BED-2	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.50	1.20	0.36	1.80	1.69	0.64	0.35	1.13	0.71	1.50	0.71	2.28	2.29	2.39	2.39	1.50	1.44	0.97	3.61	0.87	3.13	3.13	3.13	3.13
CFM PER RUN HEAT	30	24	7	36	34	13	7	22	14	30	14	45	45	47	47	30	28	19	71	17	62	62	62	62
RM GAIN MBH	1.51	0.81	0.09	1.97	2.02	0.31	0.09	0.83	0.75	1.51	0.75	1.80	1.40	2.11	2.11	1.23	1.75	0.31	1.46	0.13	0.79	0.79	0.79	0.79
CFM PER RUN COOLING	48	26	3	63	65	10	3	27	24	48	24	58	45	68	68	40	56	10	47	4	26	26	26	26
ADJUSTED 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	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH	35	55	25	46	61	44	44	46	30	46	34	19	17	24	32	35	29	39	38	21	23	38	41	5
EQUIVALENT LENGTH	150	190	180	130	160	200	150	120	170	180	200	100	170	120	140	100	180	150	100	130	150	150	160	80
TOTAL EFFECTIVE LENGTH	185	245	205	176	221	244	194	166	200	226	234	119	187	144	172	135	209	189	138	151	173	188	201	85
ADJUSTED PRESSURE	0.08	0.06	0.07	0.08	0.07	0.06	0.08	0.09	0.07	0.06	0.06	0.12	0.08	0.1	0.08	0.11	0.07	0.08	0.11	0.1	0.08	0.08	0.07	0.17
ROUND DUCT SIZE	5	4	4	5	6	4	4	4	4	5	6	5	5	5	4	6	4	5	4	5	5	5	5	5
HEATING VELOCITY (ft/min)	220	275	80	264	173	149	80	252	161	220	71	330	330	345	345	344	143	218	521	195	455	455	455	455
COOLING VELOCITY (ft/min)	352	298	34	463	331	115	34	310	275	352	122	426	330	499	499	459	286	115	345	46	191	191	191	191
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	B	C	E	D	B	E	E	E	A	B	C	C	A	A	B	C	D	D	E	A	B	B	C

RUN #	25	26	27	28	29	30	31	32
ROOM NAME	BAS	BED-3	BED-4	ENS	FAM	WIC-2	BAS	S-ENS
RM LOSS MBH	3.13	1.80	1.69	1.20	1.50	1.28	3.13	0.35
CFM PER RUN HEAT	62	36	34	24	30	25	62	7
RM GAIN MBH	0.79	1.97	2.02	0.81	1.23	0.86	0.79	0.09
CFM PER RUN COOLING	26	63	65	26	40	28	26	3
ADJUSTED PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH	15	50	55	49	26	46	40	36
EQUIVALENT LENGTH	90	140	180	160	160	130	140	160
TOTAL EFFECTIVE LENGTH	105	190	235	209	186	176	180	196
ADJUSTED PRESSURE	0.14	0.08	0.06	0.07	0.08	0.08	0.08	0.07
ROUND DUCT SIZE	5	5	6	4	4	4	5	4
HEATING VELOCITY (ft/min)	455	264	173	275	344	287	455	80
COOLING VELOCITY (ft/min)	191	463	331	298	459	321	191	34
OUTLET GRILL SIZE	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10
TRUNK	C	E	D	B	A	D	D	E

Richmond Hill City of Richmond Hill
Building Division
HVAC REVIEWED
Initials: **PXV**

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	246	0.06	8.9	10	x	8	443	TRUNK G	0	0.00	0	0	8
TRUNK B	475	0.06	11.4	16	x	8	534	TRUNK H	0	0.00	0	0	8
TRUNK C	724	0.06	13.4	20	x	8	652	TRUNK I	0	0.00	0	0	8
TRUNK D	245	0.06	8.9	10	x	8	441	TRUNK J	0	0.00	0	0	8
TRUNK E	384	0.06	10.5	14	x	8	494	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 CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	x	8
TRUNK P	0	0.05	0	0	x	8
TRUNK Q	0	0.05	0	0	x	8
TRUNK R	0	0.05	0	0	x	8
TRUNK S	0	0.05	0	0	x	8
TRUNK T	0	0.05	0	0	x	8
TRUNK U	0	0.05	0	0	x	8
TRUNK V	0	0.05	0	0	x	8
TRUNK W	0	0.05	0	0	x	8
TRUNK X	1142	0.05	16.6	32	x	8
TRUNK Y	588	0.05	12.9	20	x	8
TRUNK Z	255	0.05	9.5	10	x	8
DROP	1142	0.05	16.6	32	x	8

RETURN AIR #	1	2	3	4	5	6	7	8								BR
AIR VOLUME	90	85	85	85	88	333	105	85	0	0	0	0	0	0	0	186
PLENUM PRESSURE	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
ACTUAL DUCT LGH	28	56	75	52	48	30	14	48	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	215	200	200	195	175	185	135	215	0	0	0	0	0	0	0	220
TOTAL EFFECTIVE LH	243	256	275	247	223	215	149	263	1	1	1	1	1	1	1	234
ADJUSTED PRESSURE	0.05	0.05	0.05	0.05	0.06	0.06	0.08	0.05	12.40	12.40	12.40	12.40	12.40	12.40	12.40	0.05
ROUND DUCT SIZE	6.4	6	6	6	6	10	6	6	0	0	0	0	0	0	0	8.4
INLET GRILL SIZE	8	8	8	8	8	8	8	8	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	14	14	0	0	0	0	0	0	0	24

CITY OF RICHMOND HILL
BUILDING DIVISION

05/01/2024

RECEIVED
Per: joshua.nabua

TYPE: ROSE 6
SITE NAME: TRINIGROUP

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES		9.32.3.(1)		Initials: PXV		9.32.3.5.	
a)	☒ Direct vent (sealed combustion) only					Total Ventilation Capacity	201.4 cfm
b)	☐ Positive venting induced draft (except fireplaces)					Less Principal Ventil. Capacity	79.5 cfm
c)	☐ Natural draft, B-vent or induced draft gas fireplace					Required Supplemental Capacity	121.9 cfm
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>6</u> @ 10.6 cfm <u>63.6</u> cfm		
Other Rooms	<u>6</u> @ 10.6 cfm <u>63.6</u> cfm		
Table 9.32.3.A.	TOTAL <u>201.4</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		

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 78 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-ENS	BY INSTALLING CONTRACTOR	50	☒ 3.5
ENS-4	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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	September-23

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.
INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

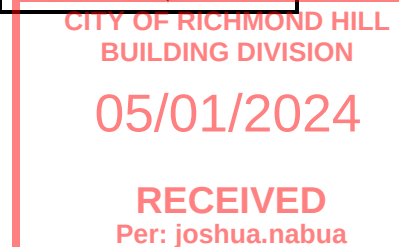
Michael O'Rourke

CITY OF RICHMOND HILL
BUILDING DIVISION

05/01/2024

RECEIVED
Per: joshua.nabua

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 102629		Model: ROSE 6		Builder: GREENPARK HOMES																																																								
				Date: 9/25/2023																																																								
Volume Calculation			Air Change & Delta T Data																																																									
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.377 x 332.73 x 43 °C x 1.2 = 6509 W = 22207 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.118 x 332.73 x 7 °C x 1.2 = 334 W = 1139 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 78 °F x 1.08 x 0.25 = 1670 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 13 °F x 1.08 x 0.25 = 275 Btu/h																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
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*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0																																																												

Michael O'Rourke
BCIN# 19669


HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: ROSE 6	OPT 5 BED - WOB	BUILDER: GREENPARK HOMES
SFQT: 3175	LO# 102629	SITE: TRINIGROUP

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-6	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.60

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):	42301.3	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:	5.5 ft
LENGTH: 58.0 ft	WIDTH: 31.0 ft	EXPOSED PERIMETER:	137.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	41.0 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



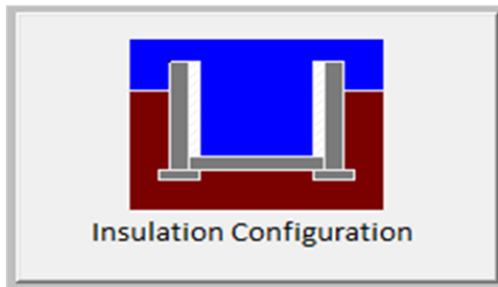
CITY OF RICHMOND HILL
BUILDING DIVISION

05/01/2024

RECEIVED
Per: joshua.nabua

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Richmond Hill	
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):	9.4	
Exposed Perimeter (m):	41.8	
Wall Height (m):	2.6	
Depth Below Grade (m):	1.40	
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):		697

TYPE: ROSE 6
LO# 102629

OPT 5 BED - WOB

Michael O'Rourke BCIN #19669

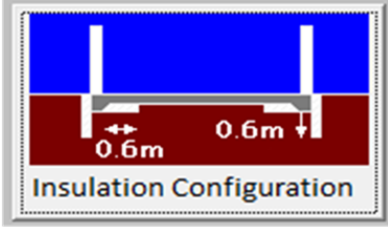
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BUILDING DIVISION

05/01/2024


RECEIVED
Per: joshua.nabua

Residential Slab on Grade Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Richmond Hill	
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):	9.4	
Exposed Perimeter (m):	12.5	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		152

TYPE: ROSE 6
LO# 102629

OPT 5 BED - WOB

Michael O'Rourke BCIN# 19669

CITY OF RICHMOND HILL
BUILDING DIVISION

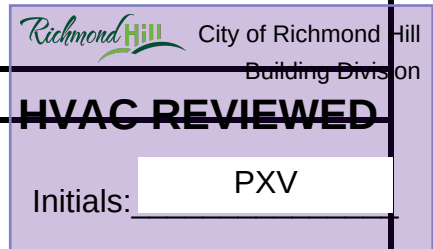
05/01/2024


RECEIVED
Per: joshua.nabua

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Richmond Hill			
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):	1197.8			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1596.8 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):	0.377			
Cooling Air Leakage Rate (ACH/H):	0.118			

TYPE: ROSE 6
LO# 102629

OPT 5 BED - WOB

Michael O'Rourke BCIN# 19669



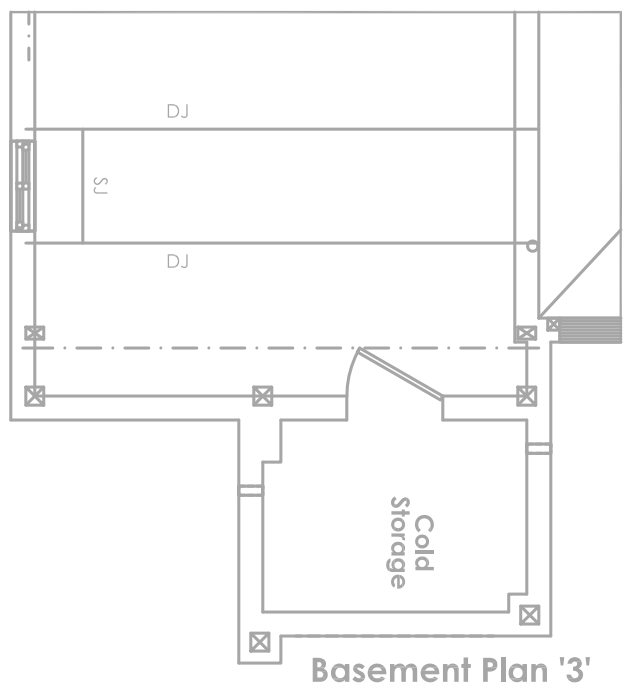
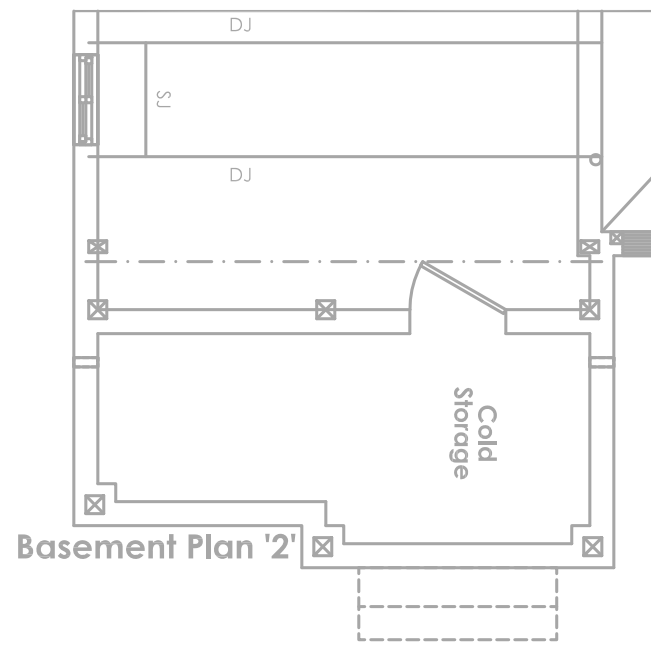
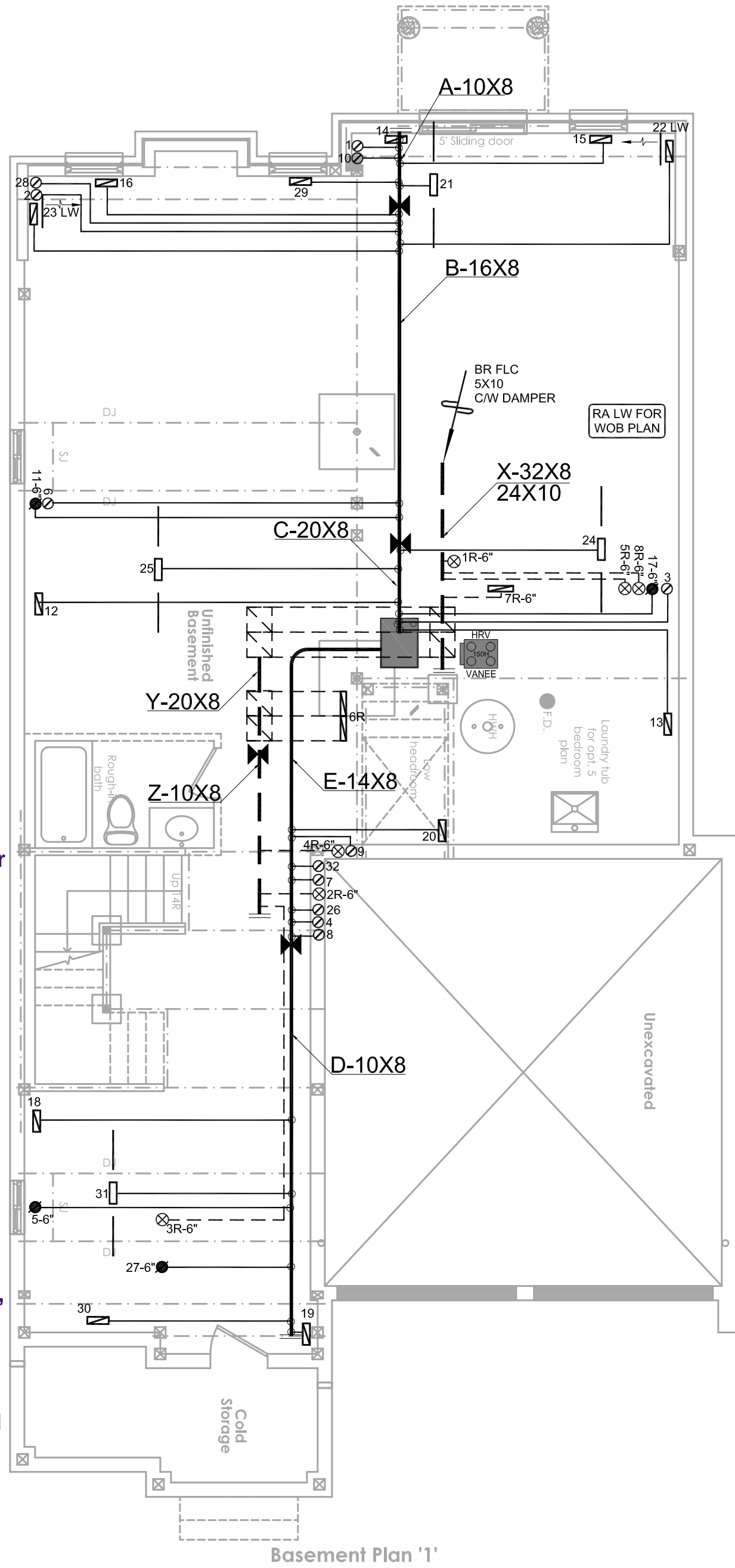
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INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. ALL SUPPLY BRANCH OUTLETS SHALL BE EQUIPPED WITH MANUAL BALANCING DAMPER. DUCTWORK WHICH PASSES THROUGH THE GARAGE OR UNHEATED SPACES SHALL BE ADEQUATELY INSULATED AND GAS-PROOFED

ALL S/A DIFFUSERS "4x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

SUPPLEMENTAL EXHAUST FAN (MINIMUM 100 CFM) DISCHARGING DIRECTLY TO THE EXTERIOR WILL BE PROVIDED IN THE KITCHEN. EXHAUST DUCTS SERVING THE KITCHEN SHALL NOT BE SMALLER THAN RECOMMENDED BY THE MANUFACTURER OF THE FANS AND MUST AT LEAST MEET O.B.C. STATED MINIMUMS.

- 1.Laundry dryer exhaust duct shall be provided as per OBC 2012 Div.B 6.2.3.8(7).
- 2.Kitchen hood exhaust duct shall be provided as per OBC 2012, Div.B 9.32.3.10, 9.32.3.5(2).
- 3.Minimum R-12 Insulation Value required for ducts installed at unheated or exposed condition (OBC 2012 Div.B 6.2.4.3(10) and seal the ducts as per 6.2.4.3(11) & HRAI Digest 2005, Clause 4.5.
- 4.Penetration of Air Barrier System by ducts, wires, conduits or building materials shall be sealed as per OBC 2012, Div.B 9.25.3.3.(9) & (10).
- 5.Volume control dampers to all branches to be installed per OBC 2012, Div.B, 6.2.4.5.
- 6.Space between studs and joists used as return ducts shall be separated from unused portion as per OBC 2012 Div.B 6.2.4.7(6)

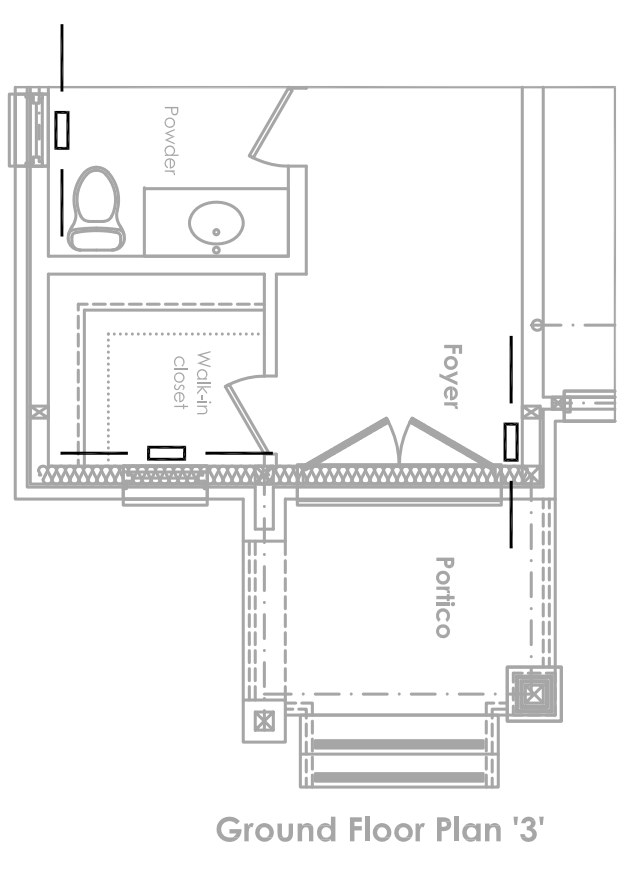
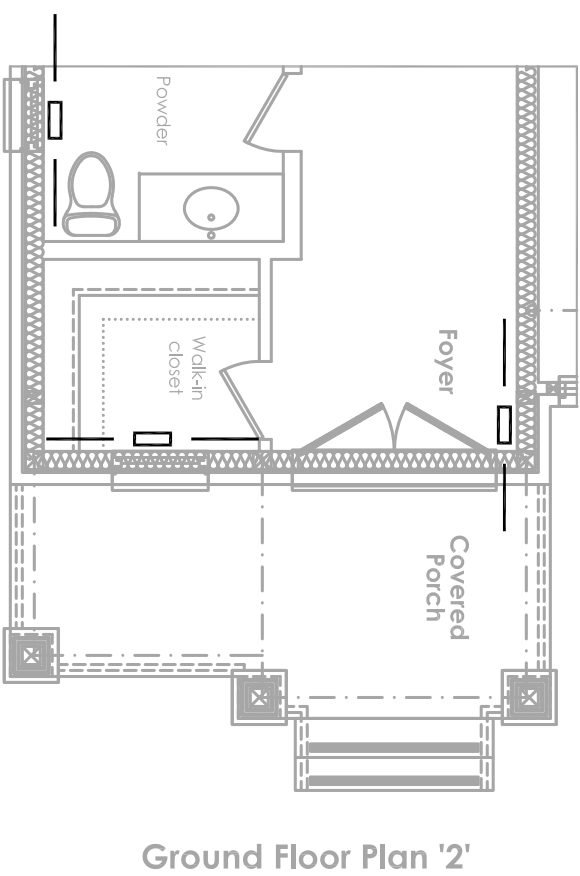
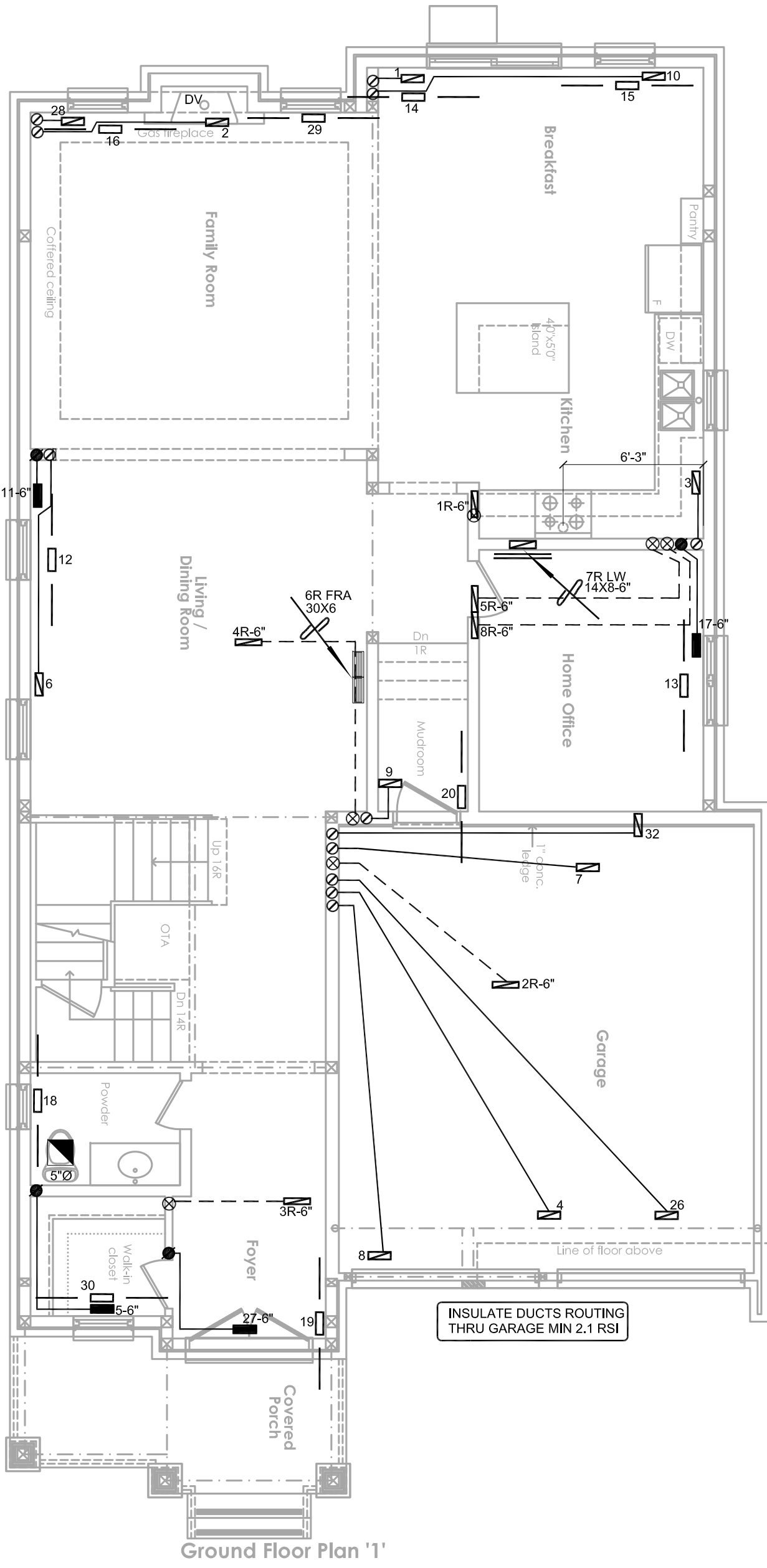


7. Combustion air supply shall be provided to the furnace and hot water tank.

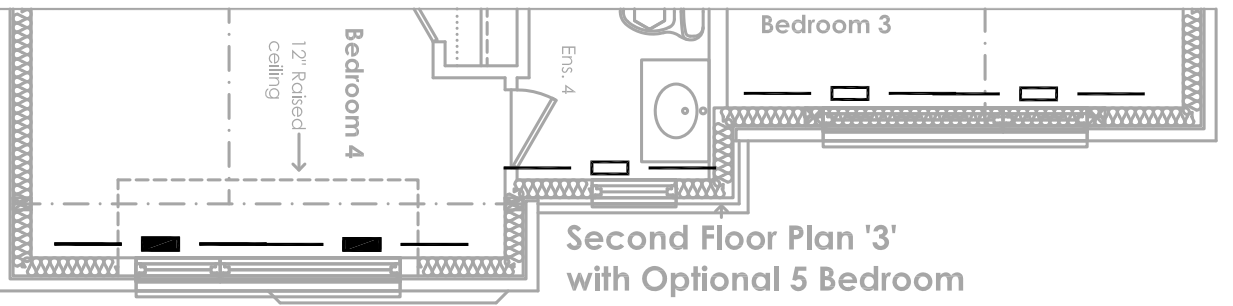
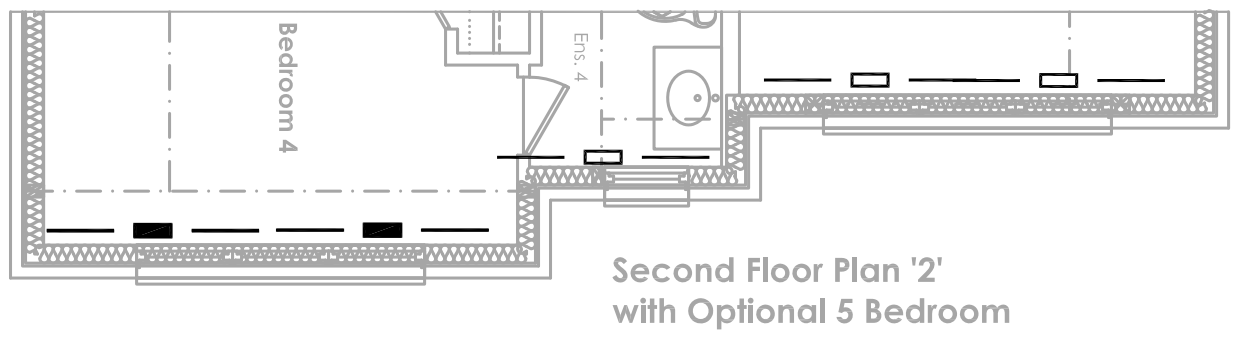
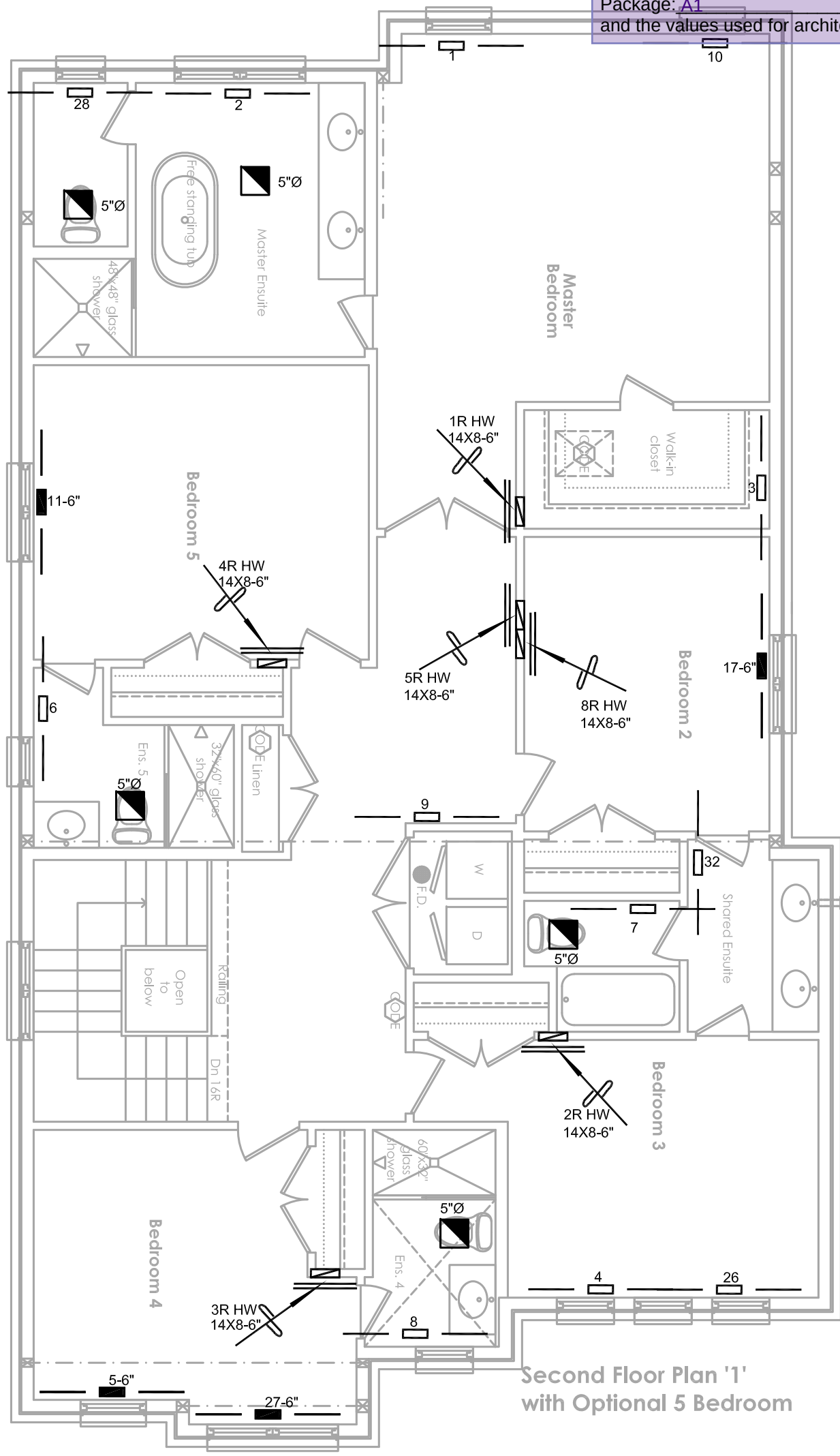
8.HRV installation, testing, startup and commissioning shall be in compliance with OBC 2012, Div.B 9.32.3.11, 9.32.3.11(7)&(10)

9. HRV duct connection shall be in compliance with OBC 2012 Div.B 9.32.3.6(3) & 9.32.3.4(7).

10. Supply air grill at finished basement shall be at low level. Return air grill for finished or unfinished basement shall be at low level. HRAI digest 2005, clause 7.7(3).



- 13.Exterior insulation effective R-Value for wall, roof or exposed floor shall be maintained at the respective location where duct or sanitary pipes are routed inside exterior envelope.
14. Return air intake shall be provided as recommended in HRAI Digest 2005 Section 4.7 Return air inlet should be positioned so that short circuiting of supply air is avoided. A high and low wall return air combination shall be provided when a combined cooling & heating system is installed.
15. For simplified HRV/ERV installation, with stale air and fresh air connected to return air plenum, stale air intake and fresh air supply shall be separated minimum 3' or as recommended by HRV/ERV Manufacturer.



HEAT LOSS 59403 BTU/H	# OF RUNS	S/A	R/A	FANS
UNIT DATA	3RD FLOOR			
MAKE GOODMAN	2ND FLOOR	16	6	5
MODEL GMCE960803BNA	1ST FLOOR	10	2	2
INPUT 80.0 MBTU/H	BASEMENT	6	1	0
OUTPUT 76.8 MBTU/H	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			
COOLING 3.0 TONS				
FAN SPEED 1142 cfm @ 0.6" w.c.				

HVAC LEGEND	
	SUPPLY AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT
	LINEAR BAR or LINEAR SLOT GRILLE
	SUPPLY AIR BOOT ABOVE
	6" SUPPLY AIR BOOT ABOVE
	SUPPLY AIR STACK
	6" SUPPLY AIR STACK
	14X8 RETURN AIR GRILLE
	30X8 RETURN AIR GRILLE
	FLOOR RETURN AIR GRILLE
	RETURN STACK ABOVE
	RETURN AIR STACK
	REDUCER
	SUPPLY DUCTWORK
	RETURN DUCTWORK
	FLEX DUCT
	EXHAUST FAN
	LINT TRAP by REVERSOMATIC
	DIRECT VENT
	LOW WALL
	HIGH WALL
	CEILING
	MOTORIZED ZONE DAMPER
	MOTORIZED DAMPER
	EXHAUST PIPE
	CONCENTRIC VENT KIT
	CONCENTRIC HRV or ERV VENT KIT
	SINGLE WALL BOX by REVERSOMATIC
	DOUBLE WALL BOX by REVERSOMATIC
	TRIPLE WALL BOX by REVERSOMATIC
	DRYER BOOSTER FAN

ISSUED FOR PERMIT		SEPT/23
Revision		Date
SB-12 PACKAGE		A1
Michael Offutt has reviewed and taken responsibility for the design work and am qualified under division C.2.2.5 of the building code.  Michael Offutt BCMA 1999 HVAC Design Ltd.		

HVACDESIGNS LTD.
375 Finley Ave - Unit 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

Client GREENPARK HOMES
Project Name TRINIGROUP RICHMOND HILL, ONTARIO
ROSE 6 - OPT 5 BED - WOB
3175 SQFT
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Sheet Title HVAC
Drawn By YV
Scale 3/16"=1'-0"
Date SEPTEMBER 2023
LO # 102629

HEATING LAYOUT
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