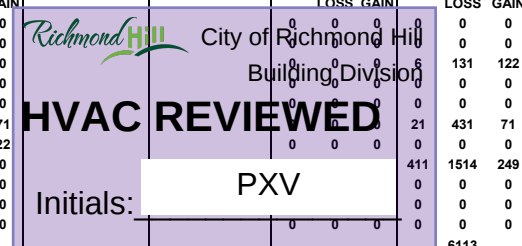


SITE NAME: TRINIGROUP		BUILDER: GREENPARK HOMES		TYPE: ROSE 6		GFA: 3175		DATE: Sep-23 LO# 102626		WINTER NATURAL AIR CHANGE RATE 0.354		HEAT LOSS ΔT °F. 78		CSA-F280-12	
										SUMMER NATURAL AIR CHANGE RATE 0.110		HEAT GAIN ΔT °F. 13		SB-12 PACKAGE A1	
ROOM USE	EXP. WALL	CLG. HT.	FACTORS	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	ENS-3	FLEX	ENS-4	WIC-2	
				35	27	5	25	36	17	9	8	5	8	12	
				9	9	9	9	9	9	9	9	9	9	10	
GRS.WALL AREA	LOSS	GAIN		319	246	46	228	328	155	82	73	46	73	121	
GLAZING	LOSS	GAIN		LOSS	GAIN	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	
NORTH	21.8	13.3	0	0	0	0	0	0	0	0	0	8	174	107	0
EAST	21.8	33.4	0	0	0	0	0	0	0	0	0	0	0	0	16
SOUTH	21.8	20.3	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST	21.8	33.4	22	479	735	26	566	869	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
DOORS	20.5	3.4	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	184	838	138	273
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	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	210	276	123	237
NO ATTIC EXPOSED CLG	2.8	1.3	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
BASEMENT/CRAWL HEAT LOSS															
SLAB ON GRADE HEAT LOSS															
SUBTOTAL HT LOSS				2294		1835		274	2621		2838		1501		606
SUB TOTAL HT GAIN					1164		1153		64		1822		2108		757
LEVEL FACTOR / MULTIPLIER	0.20	0.29		0.20	0.29		0.20	0.29		0.20	0.29		0.20	0.29	
AIR CHANGE HEAT LOSS				659		527		79	753		815		431		174
AIR CHANGE HEAT GAIN					98		5	154	179		64		10		46
DUCT LOSS				0		0		337	365		0		78		102
DUCT GAIN				0		0		304	335		0		13		59
HEAT GAIN PEOPLE	240		2	480	0	0	0	1	240	1	240	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS				826		0		826	826		826		0		0
TOTAL HT LOSS BTU/H				2953		2363		352	3711		4018		1932		858
TOTAL HT GAIN x 1.3 BTU/H				3338		1625		90	4350		4795		2452		189

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	DN/LV	H-OFF	KT/BF	FAM	LAUN	PWD	FOY	MUD			WOD	BAS
				21	24	40	31	6	11	35	5			41	178
				10	10	10	10	9	10	10	10			9	9
GRS.WALL AREA	LOSS	GAIN		212	242	404	313	55	111	354	51			349	1102
GLAZING	LOSS	GAIN		LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS			LOSS	LOSS
NORTH	21.8	13.3	0	0	0	22	479	293	11	240	147	0	0	0	0
EAST	21.8	33.4	0	0	0	0	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	0
WEST	21.8	33.4	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
DOORS	20.5	3.4	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.6	0.8	182	832	137	220	1007	166	331	1512	249	283	1293	213	46
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	0	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	0
NO ATTIC EXPOSED CLG	2.8	1.3	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
BASEMENT/CRAWL HEAT LOSS															
SLAB ON GRADE HEAT LOSS															
SUBTOTAL HT LOSS				1485		1486		3102	1947		491		628		2345
SUB TOTAL HT GAIN					747		459		2467		1215		193		221
LEVEL FACTOR / MULTIPLIER	0.30	0.50		0.30	0.50		0.30	0.50		0.30	0.50		0.30	0.50	
AIR CHANGE HEAT LOSS				749		750		1565	982		141		317		1183
AIR CHANGE HEAT GAIN					63		39		209		103		16		19
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
HEAT GAIN APPLIANCES/LIGHTS				826		826		826	826		826		826		826
TOTAL HT LOSS BTU/H				2235		2236		4667	2929		632		945		3528
TOTAL HT GAIN x 1.3 BTU/H				2127		1720		4552	2787		1345		311		1470



TOTAL HEAT GAIN BTU/H:

35890

TONS: 2.99

LOSS DUE TO VENTILATION LOAD BTU/H: 1670

STRUCTURAL HEAT LOSS: 57791

TOTAL COMBINED HEAT LOSS BTU/H: 59461

SITE NAME: TRINIGROUP
BUILDER: GREENPARK HOMES

TYPE: ROSE 6

DATE: Sep-23

GFA: 3175 LO# 102626

HEATING CFM 1142 COOLING CFM 1142
TOTAL HEAT LOSS 57,791 TOTAL HEAT GAIN 35,615
AIR FLOW RATE CFM 19.76 AIR FLOW RATE CFM 32.06furnace pressure 0.7
furnace filter 0.14
a/c coil pressure 0.26
available pressure
for s/a & r/a 0.30#GOODMAN
GMCE960803BNA 80AFUE = 96 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = 76,800

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	15	10	6
R/A	0	0	5	2	1

plenium 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 0.12FAN SPEED
LOW
MEDLOW
MEDIUM 0
MEDIUM HIGH 0
HIGH 1142DESIGN CFM = 1142
CFM @ .7" E.S.P.

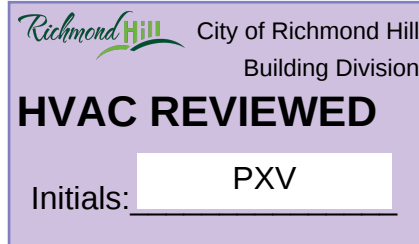
TEMPERATURE RISE 62 °F

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-2	BED-3	BED-4	ENS-2	ENS-3	FLEX	MBR	ENS-4	DN/LV	H-OFF	KT/BF	KT/BF	FAM	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.48	1.18	0.35	1.86	2.01	1.93	0.86	1.13	1.02	1.48	0.68	2.23	2.24	2.33	2.33	1.46	0.63	0.94	3.53	0.85	3.25	3.25	3.25	3.25
CFM PER RUN HEAT	29	23	7	37	40	38	17	22	20	29	13	44	44	46	46	29	12	19	70	17	64	64	64	64
RM GAIN MBH.	1.67	0.81	0.09	2.17	2.40	2.45	0.19	0.84	0.40	1.67	0.32	2.13	1.72	2.28	2.28	1.39	1.35	0.31	1.47	0.13	0.32	0.32	0.32	0.32
CFM PER RUN COOLING	54	26	3	70	77	79	6	27	13	54	10	68	55	73	73	45	43	10	47	4	10	10	10	10
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	33	46	34	19	17	24	32	35	29	39	38	21	23	30	33	5
EQUIVALENT LENGTH	150	190	180	130	160	200	150	120	190	180	200	100	170	120	140	100	180	150	100	130	150	120	140	80
TOTAL EFFECTIVE LENGTH	185	245	205	176	221	244	194	166	223	226	234	119	187	144	172	135	209	189	138	151	173	150	173	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	0.1	0.08	0.17
ROUND DUCT SIZE	5	4	4	6	6	6	4	4	4	5	4	5	5	6	6	4	5	4	5	4	5	5	5	5
HEATING VELOCITY (ft/min)	213	264	80	189	204	194	195	252	229	213	149	323	323	235	235	333	88	218	514	195	470	470	470	470
COOLING VELOCITY (ft/min)	396	298	34	357	393	403	69	310	149	396	115	499	404	372	372	516	316	115	345	46	73	73	73	73
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	B	C	E	D	B	E	E	C	A	B	C	C	A	A	B	C	D	D	E	A	B	B	C

RUN #	25	26	27	28	29	30	31
ROOM NAME	BAS	BED-2	BED-3	ENS	FAM	WIC-2	BAS
RM LOSS MBH.	3.25	1.86	2.01	1.18	1.46	1.25	3.25
CFM PER RUN HEAT	64	37	40	23	29	25	64
RM GAIN MBH.	0.32	2.17	2.40	0.81	1.39	0.87	0.32
CFM PER RUN COOLING	10	70	77	26	45	28	10
ADJUSTED PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	15	50	55	49	26	46	40
EQUIVALENT LENGTH	90	140	180	160	160	130	140
TOTAL EFFECTIVE LENGTH	105	190	235	209	186	176	180
ADJUSTED PRESSURE	0.14	0.08	0.06	0.07	0.08	0.08	0.08
ROUND DUCT SIZE	5	6	6	4	5	4	5
HEATING VELOCITY (ft/min)	470	189	204	264	213	287	470
COOLING VELOCITY (ft/min)	73	357	393	298	330	321	73
OUTLET GRILL SIZE	3X10	4X10	4X10	3X10	3X10	3X10	3X10
TRUNK	C	E	D	B	A	D	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	243	0.06	8.9	12	x	8	365	TRUNK G	0	0.00	0	0	8
TRUNK B	497	0.06	11.6	16	x	8	559	TRUNK H	0	0.00	0	0	8
TRUNK C	752	0.06	13.5	22	x	8	615	TRUNK I	0	0.00	0	0	8
TRUNK D	258	0.06	9.1	10	x	8	464	TRUNK J	0	0.00	0	0	8
TRUNK E	388	0.06	10.6	14	x	8	499	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	618	0.05	13.2	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									BR
AIR VOLUME	115	85	85	85	105	363	95	0	0	0	0	0	0	0	0	209
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	54	75	48	48	30	14	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	220	200	195	215	185	135	0	0	0	0	0	0	0	0	220
TOTAL EFFECTIVE LH	203	274	275	243	263	215	149	1	1	1	1	1	1	1	1	234
ADJUSTED PRESSURE	0.06	0.05	0.05	0.05	0.05	0.06	0.08	12.40	12.40	12.40	12.40	12.40	12.40	12.40	12.40	0.05
ROUND DUCT SIZE	6.7	6	6	6	6.8	10.3	5.8	0	0	0	0	0	0	0	0	8.8
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	30	14	0	0	0	0	0	0	0	0	30

CITY OF RICHMOND HILL
BUILDING DIVISION

05/01/2024

RECEIVED
Per: joshua.nabua

TYPE: ROSE 6
SITE NAME: TRINIGROUP

LO # 102626

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>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	

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>201.4</u> cfm	
Less Principal Ventil. Capacity	<u>79.5</u> cfm	
Required Supplemental Capacity	<u>121.9</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 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
ENS-2	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		
<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:	Richmond Hill City of Richmond Hill	
City:	Building Division	
Telephone #:	HVAC REVIEWED	

INSTALLING CONTRACTOR	
Initials:	PXV
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

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#: 102626		Model: ROSE 6		Builder: GREENPARK HOMES																																																								
				Date: 9/22/2023																																																								
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>1399</td><td>9</td><td>11891.5</td></tr> <tr><td>First</td><td>1399</td><td>10</td><td>14129.9</td></tr> <tr><td>Second</td><td>1789</td><td>9</td><td>16279.9</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>42,301.3 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>1197.8 m³</td></tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1399	9	11891.5	First	1399	10	14129.9	Second	1789	9	16279.9	Third	0	9	0	Fourth	0	9	0	Total:			42,301.3 ft³	Total:			1197.8 m³	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 20%;">0.354</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.110</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="5" style="text-align: center;">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>-21</td> <td>43</td> <td>78</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>31</td> <td>7</td> <td>13</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.354	SUMMER NATURAL AIR CHANGE RATE	0.110	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-21	43	78	Summer DTDc	24	31	7	13
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																									
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Winter DTDh	22	-21	43	78																																																								
Summer DTDc	24	31	7	13																																																								
5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.354 x 332.73 x 43 °C x 1.2 = 6105 W = 20831 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.110 x 332.73 x 7 °C x 1.2 = 313 W = 1069 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)																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ <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" style="text-align: center;">20,831</td><td>9,095</td><td>1.145</td></tr> <tr><td>2</td><td>0.3</td><td>12,389</td><td>0.504</td></tr> <tr><td>3</td><td>0.2</td><td>14,500</td><td>0.287</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	20,831	9,095	1.145	2	0.3	12,389	0.504	3	0.2	14,500	0.287	4	0	0	0.000	5	0	0	0.000																														
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5	0		0	0.000																																																								

Michael O'Rourke
BCIN# 19669

CITY OF RICHMOND HILL
BUILDING DIVISION

05/01/2024

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Per: joshua.nabua

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: ROSE 6	BUILDER: GREENPARK HOMES
SFQT: 3175	SITE: TRINIGROUP
LO# 102626	

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):	1.80	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:	178.0 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



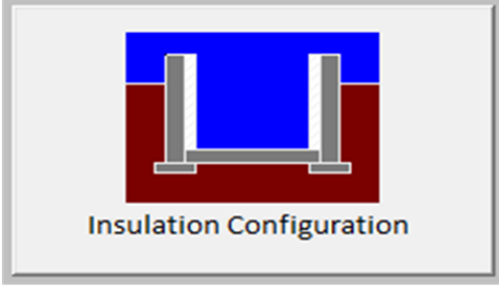
CITY OF RICHMOND HILL
BUILDING DIVISION

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):	17.7	 Insulation Configuration
Floor Width (m):	9.4	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.6	
Depth Below Grade (m):	1.68	
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):		1791

TYPE: ROSE 6
LO# 102626

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):	7.68			
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):	0.354			
Cooling Air Leakage Rate (ACH/H):	0.110			

TYPE: ROSE 6
LO# 102626

Michael O'Rourke BCIN# 19669

CITY OF RICHMOND HILL
BUILDING DIVISION

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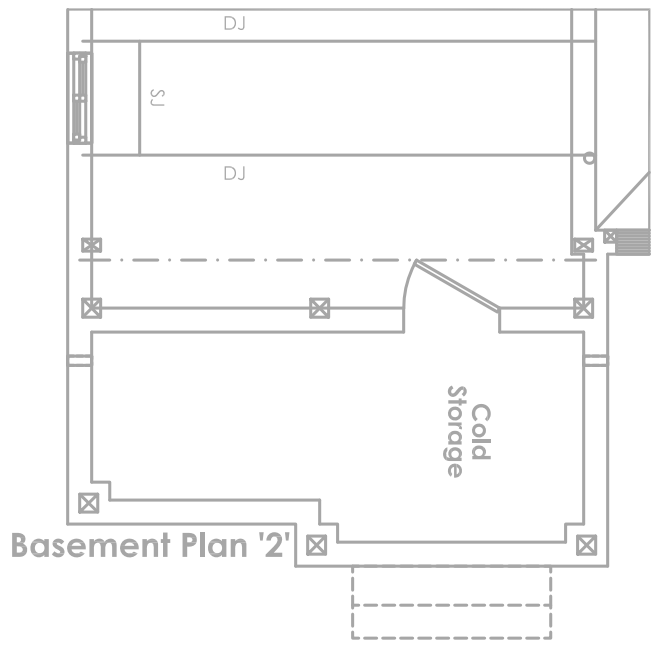
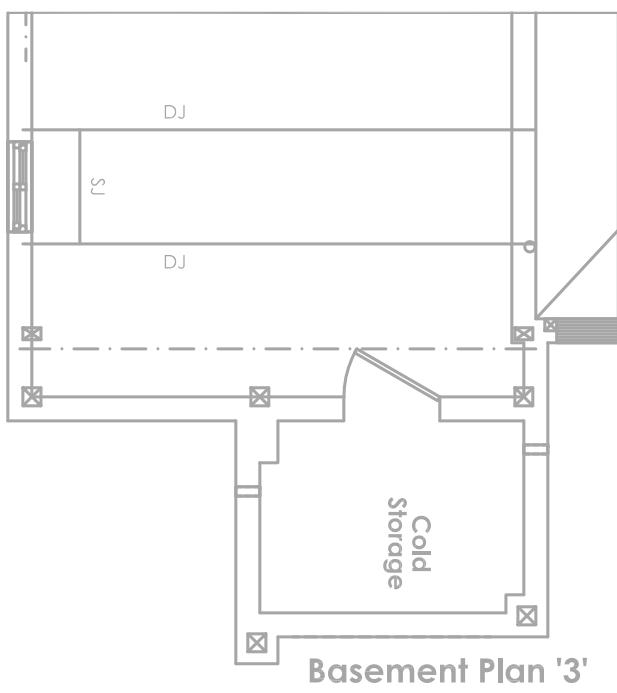
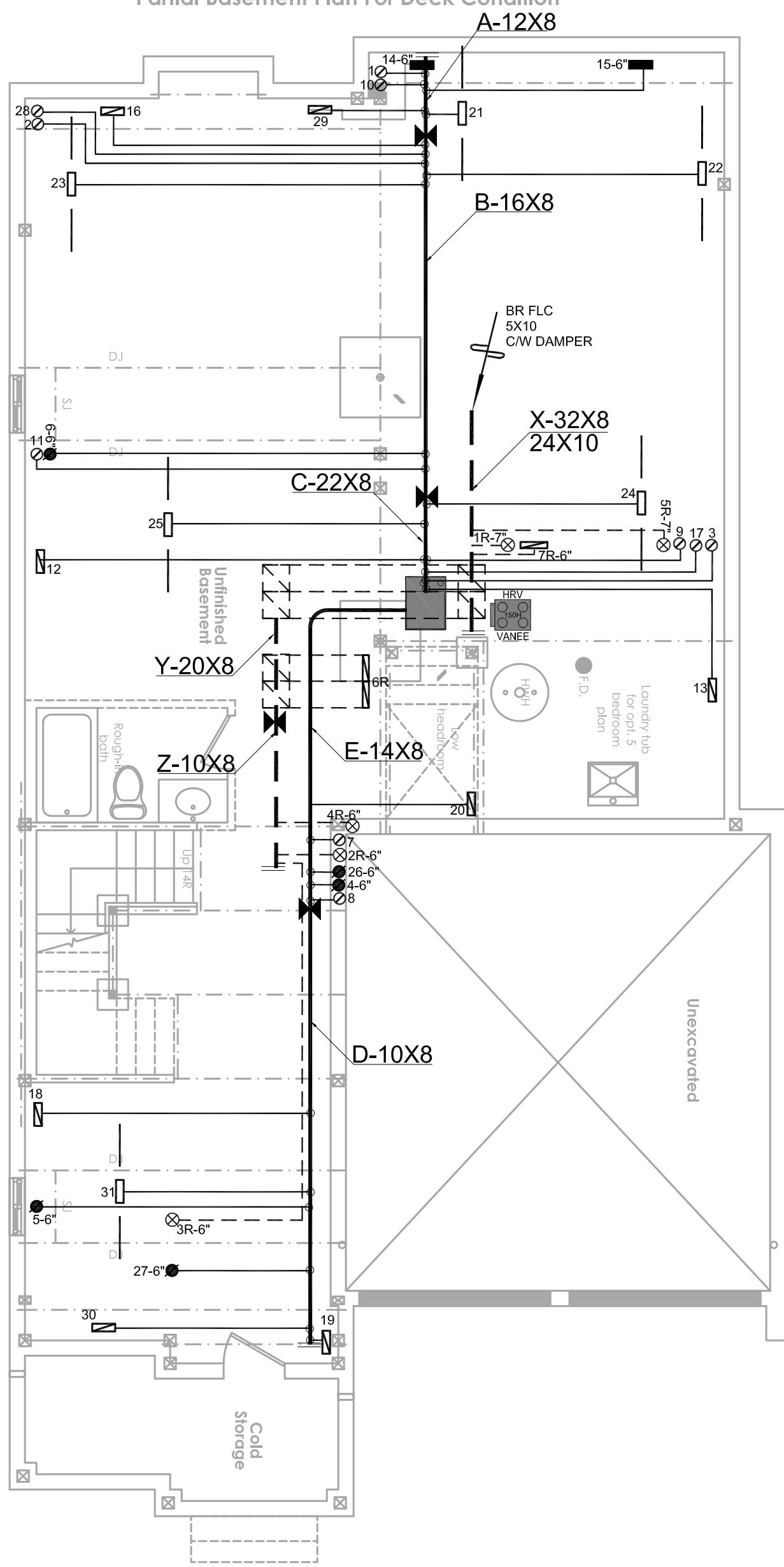
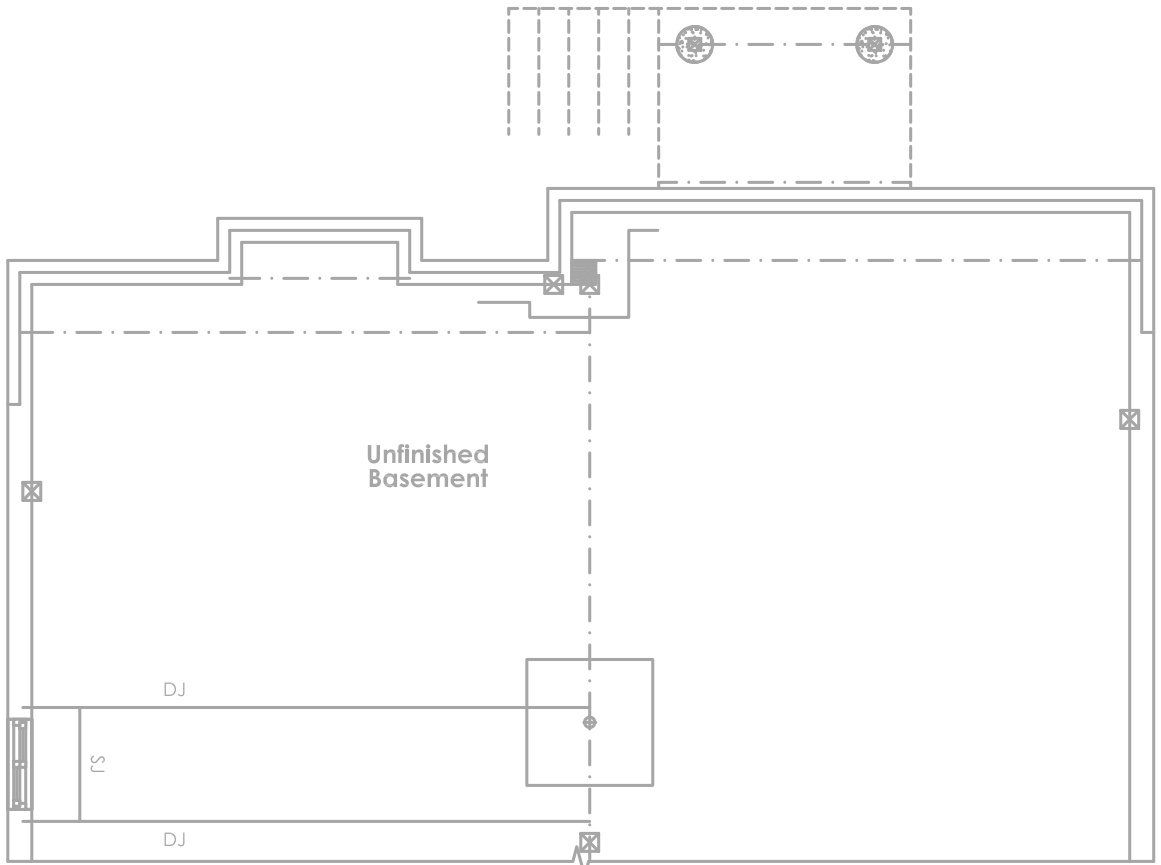
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INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. ALL SUPPLY BRANCH OUTLETS SHALL BE EQUIPPED WITH MANUAL BALANCING DAMPER. DUCTWORK WHICH PASSES THROUGH THE GARAGE OR UNHEATED SPACES SHALL BE ADEQUATELY INSULATED AND GAS-PROOFED

ALL S/A DIFFUSERS "4x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5" 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)

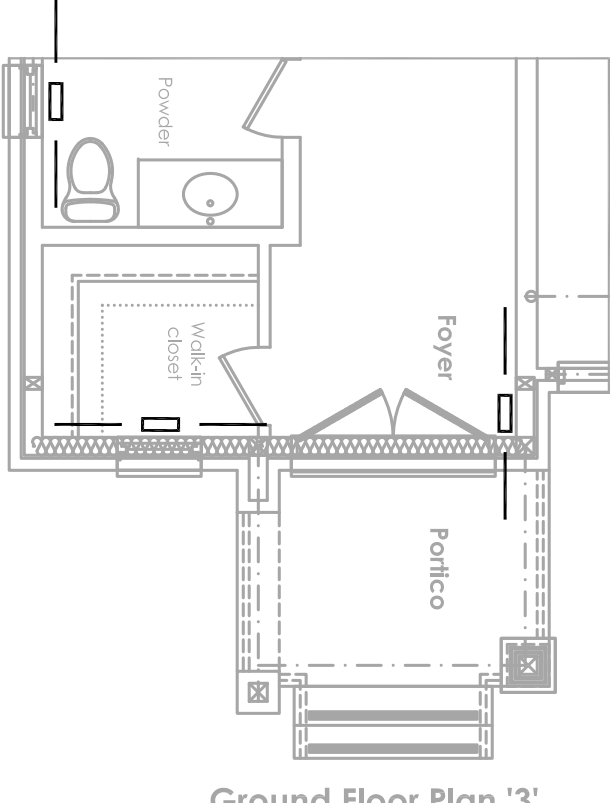
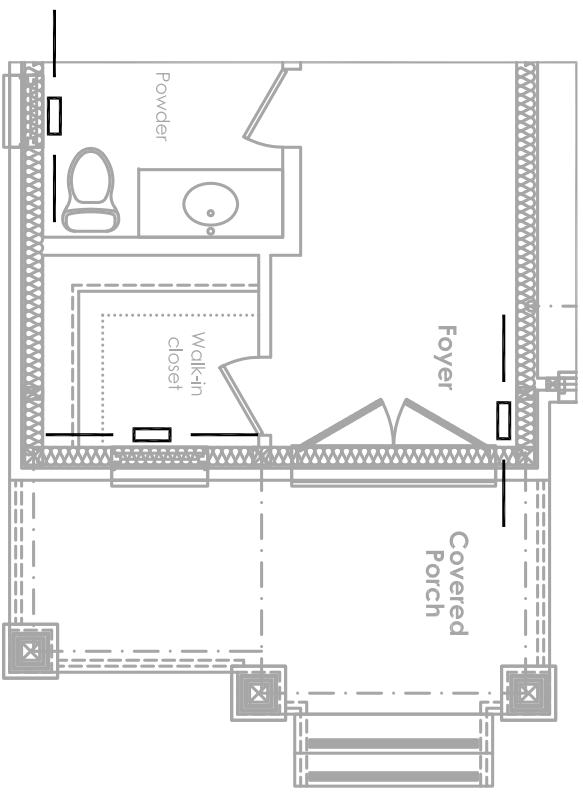
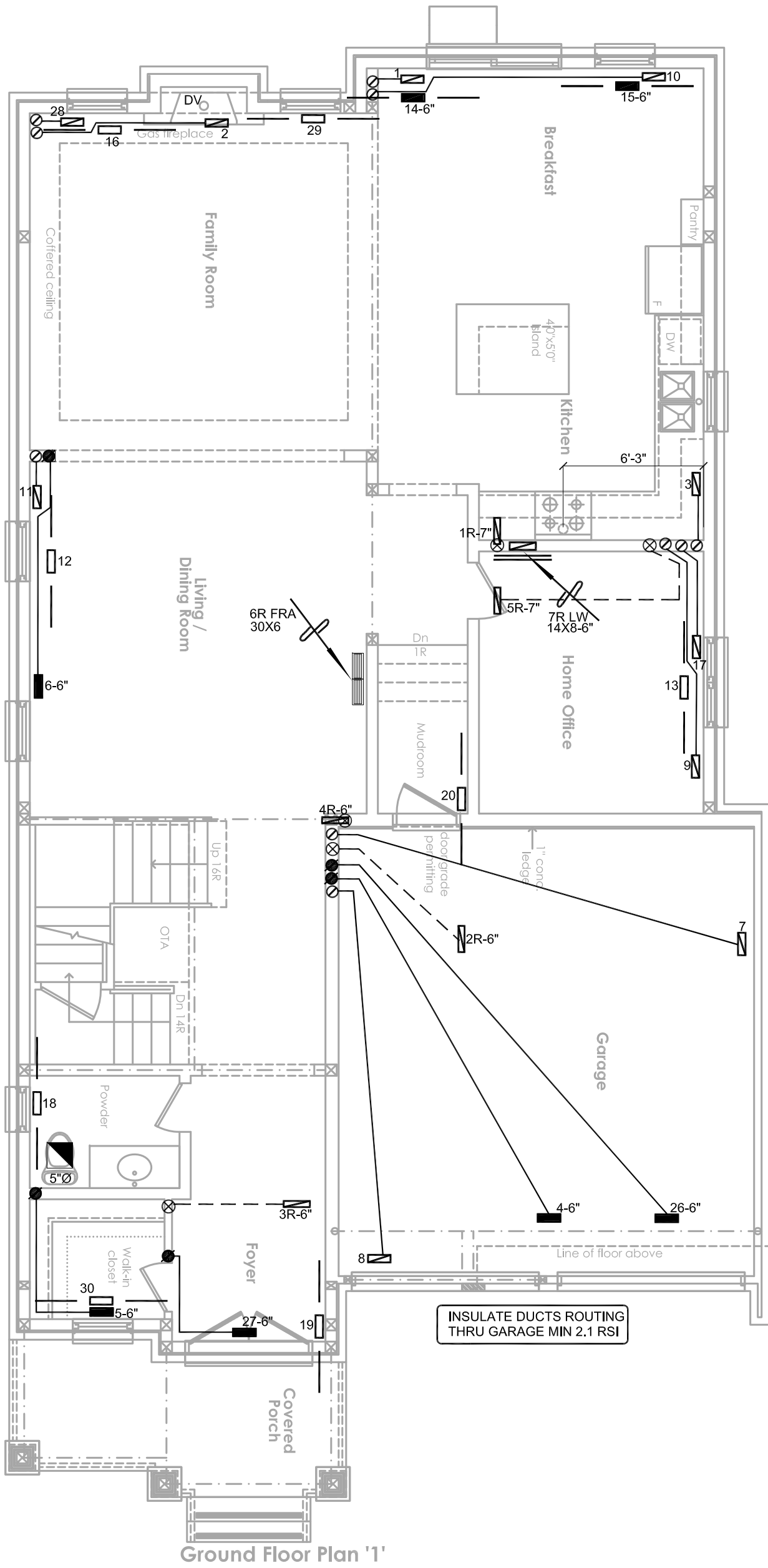


7. Combustion air supply shall be provided to the furnace and hot water tank.

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).

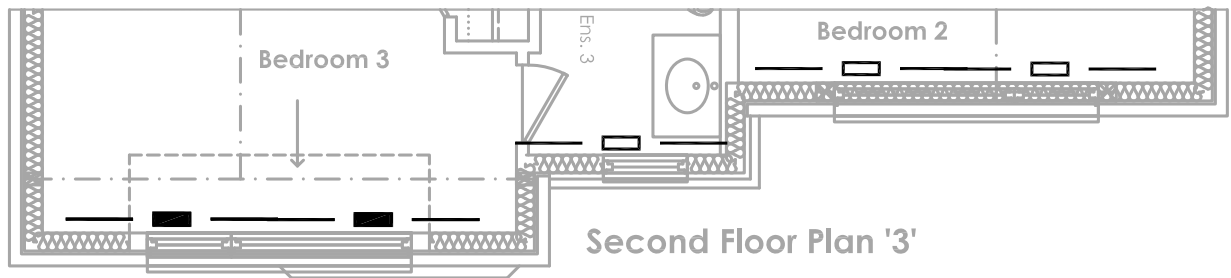
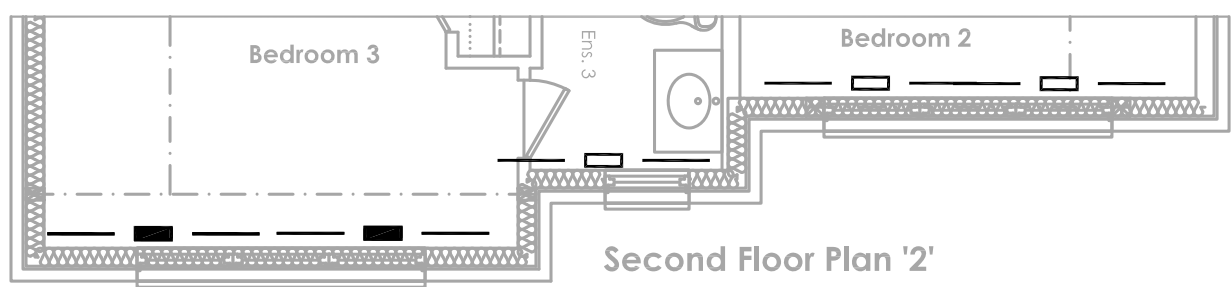
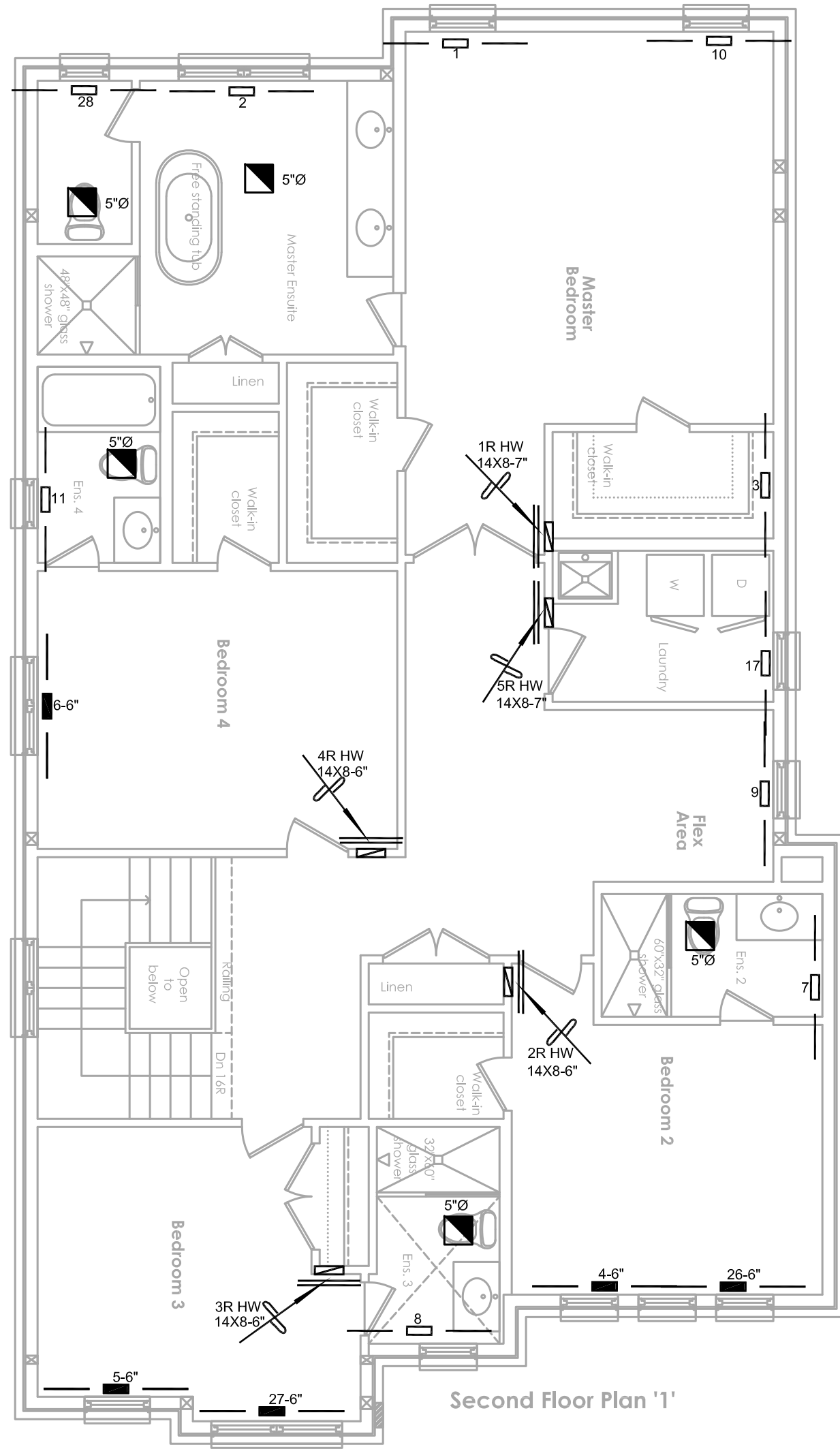
10. Supply air grill at finished basement shall be at low level. Return air grill for finished or unfinished basement shall be at low level. HRAI digest 2005, clause 7.7(3).



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 59461 BTU/H	# OF RUNS	S/A	R/A	FANS
UNIT DATA	3RD FLOOR			
MAKE GOODMAN	2ND FLOOR	15	5	5
MODEL GMEC960803BNA	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" UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A			
COOLING 3.0 TONS				
FAN SPEED 1142 cfm @ 0.6" w.c.				

City of Richmond Hill
Building Division

REVIEWED

By: PV Date: May/28/2024

Building Permit #: RM#-24-00020

All construction shall comply with the Ontario Building Code and all other applicable statutory regulations. The reviewed documents must be kept on site at all times.
Building inspection line: 905-771-5465 (24 hr)
buildinginspections@richmondhill.ca
Building inquiry line 905-771-8810
building@richmondhill.ca

Ensure that R-Values and U-Values used for heat loss and heat gain calculations are consistent with the values specified by SB-12 Prescriptive Package: A1 and the values used for architectural design.

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
	LT LIN TRAP by REVERSOMATIC
	DV DIRECT VENT
	LW LOW WALL
	HW HIGH WALL
	CLG. CEILING
	Z.D. MOTORIZED ZONE DAMPER
	M.D. 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

2

1

ISSUED FOR PERMIT

SEPT/23

YY

10/1

Revision

Date

By

SB-12 PACKAGE

A1

Michael Offutt has reviewed and is responsible for the design work and is qualified under section C.2.2 of the building code.

Michael Offutt

Michael Offutt BSCM 1999

MECC Design Ltd.

375 Finley Ave - Unit 202 - Ajax, Ontario L1S 2E2
Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdsgns.ca
Web: www.hvacdsgns.ca

Specializing in Residential Mechanical Design Services

Client GREENPARK HOMES

Project Name TRINIGROUP RICHMOND HILL, ONTARIO

ROSE 6

3175 SQFT

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Sheet Title HVAC

Drawn By YV

Scale 3/16"=1'-0"

Date SEPTEMBER 2023

LO # 102626

HEATING LAYOUT

BUILDING DIVISION

05/01/2024

RECEIVED

Per: joshua.nabul