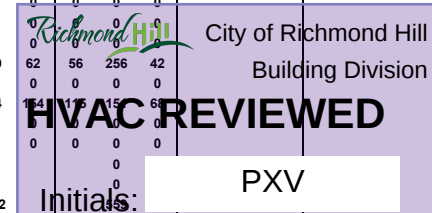


SITE NAME: TRINIGROUP				OPT 5 BED				DATE: Sep-23				WINTER NATURAL AIR CHANGE RATE 0.352				HEAT LOSS ΔT °F. 78				CSA-F280-12			
BUILDER: GREENPARK HOMES				TYPE: ROSE 5				GFA: 3349				SUMMER NATURAL AIR CHANGE RATE 0.110				HEAT GAIN ΔT °F. 13				SB-12 PACKAGE A1			
ROOM USE				MBR				ENS				WIC				BED-2				BED-3			
EXP. WALL				36				26				10				17				26			
CLG. HT.				9				9				9				9				9			
FACTORS																							
GRS.WALL AREA				324				234				90				153				234			
GLAZING				LOSS GAIN				LOSS GAIN				LOSS GAIN				LOSS GAIN				LOSS GAIN			
NORTH				21.8 16.0				0 0 0				0 0 0				0 0 0				0 0 0			
EAST				21.8 41.6				22 479 914				16 349 665				0 0 0				0 0 0			
SOUTH				21.8 24.9				0 0 0				14 305 349				0 0 0				32 697 797			
WEST				21.8 41.6				0 0 0				0 0 0				0 0 0				52 1133 2161			
SKYLT.				38.1 101.5				0 0 0				0 0 0				0 0 0				48 1046 1994			
DOORS				20.5 3.4				0 0 0				0 0 0				0 0 0				0 0 0			
NET EXPOSED WALL				4.6 0.8				302 1380 227				204 932 153				90 411 68				121 553 91			
NET EXPOSED BSMT WALL ABOVE GR				3.7 0.6				0 0 0				0 0 0				0 0 0				0 0 0			
EXPOSED CLG				1.3 0.6				324 426 190				175 230 103				94 123 55				185 243 109			
NO ATTIC EXPOSED CLG				2.8 1.3				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				208 543 89			
BASEMENT/CRAWL HEAT LOSS								0				0				0				0			
SLAB ON GRADE HEAT LOSS								0				0				0				0			
SUBTOTAL HT LOSS				2285				1815				535				1493				2781			
SUB TOTAL HT GAIN				1332				1270				123				996				2509			
LEVEL FACTOR / MULTIPLIER				0.20 0.31				0.20 0.31				0.20 0.31				0.20 0.31				0.20 0.31			
AIR CHANGE HEAT LOSS				717				570				168				469				873			
AIR CHANGE HEAT GAIN				103				98				9				77				194			
DUCT LOSS				0				0				0				0				365			
DUCT GAIN				0				0				0				0				351			
HEAT GAIN PEOPLE				240				2				480				0				1			
HEAT GAIN APPLIANCES/LIGHTS				563				0				0				563				563			
TOTAL HT LOSS BTU/H				3002				2385				702				1961				4019			
TOTAL HT GAIN x 1.3 BTU/H				3221				1778				172				2440				5014			



ROOM USE			OFFICE			FML			KT/BT			LV/DN			PWD			FOY			MUD			WOD			BAS		
EXP. WALL			10			37			39			35			18			23			32			44			190		
CLG. HT.			10			10			10			10			10			10			10			9			9		
FACTORS																													
GRS.WALL AREA			100			370			390			350			180			230			320			396			1272		
GLAZING			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN		
NORTH	21.8	16.0	0	0	0	0	0	0	0	0	0	44	958	703	0	0	0	0	0	0	0	0	0	8	174	128			
EAST	21.8	41.6	0	0	0	22	479	914	62	1351	2576	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
SOUTH	21.8	24.9	22	479	548	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	87	100				
WEST	21.8	41.6	0	0	0	0	0	0	0	0	0	0	0	0	16	349	665	22	479	914	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			
DOORS	20.5	3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	287	47	20	411	68	0	411	68				
NET EXPOSED WALL	4.6	0.8	78	356	59	348	1590	262	328	1498	247	306	1398	230	164	749	123	194	886	146	300	1371	225	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	244	899	148				
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				
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				
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				
BASEMENT/CRAWL HEAT LOSS																													
SLAB ON GRADE HEAT LOSS																													
SUBTOTAL HT LOSS				836			2069			2849			2356			1098		1653			1781			1335		8757			
SUB TOTAL HT GAIN					606		1176			2823			933				788		1107			293		979		560			
LEVEL FACTOR / MULTIPLIER			0.30	0.53		0.30	0.53		0.30	0.53		0.30	0.53		0.30	0.53		0.30	0.53		0.30	0.53		0.50	1.10				
AIR CHANGE HEAT LOSS				441			1093			1505			1245			580		873			941					11131			
AIR CHANGE HEAT GAIN					47		91			218			72			61		85			23					119			
DUCT LOSS				0			0			0			0			0		0			0					0			
DUCT GAIN				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	0	0	0	0			
HEAT GAIN APPLIANCES/LIGHTS				563			563			563			563			0		0			563					563			
TOTAL HT LOSS BTU/H				1277			3162			4354			3601			1678		2526			2722			1335		19888			
TOTAL HT GAIN x 1.3 BTU/H					1582		2379			4685			2039			1104		1550			1143			1273		1611			

SITE NAME: TRINIGROUP
BUILDER: GREENPARK HOMESOPT 5 BED
TYPE: ROSE 5

DATE: Sep-23

GFA: 3349 LO# 102607

HEATING CFM 1142 COOLING CFM 1142
TOTAL HEAT LOSS 59,544 TOTAL HEAT GAIN 37,102
AIR FLOW RATE CFM 19.18 AIR FLOW RATE CFM 30.78furnace pressure 0.7
furnace filter 0.14
a/c coil pressure 0.26
available pressure
for s/a & r/a 0.30#*GOODMAN
GMEC960804CNA 80AFUE = 96 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = 76,800

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

plenum pressure s/a 0.16
max s/a dif press. loss 0.02
min adjusted pressure s/a 0.14
r/a pressure 0.14
r/a grille press. Loss 0.02
adjusted pressure r/a 0.12FAN SPEED 868
LOW 978
MEDLOW 1142
MEDIUM 1504
HIGH 1615DESIGN CFM = 1142
CFM @ .7" E.S.P.

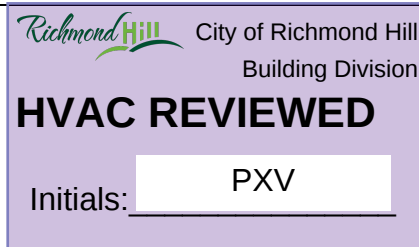
TEMPERATURE RISE 62 °F

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	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	ENS-4	BED-5	MBR	ENS-3	OFFICE	FML	KT/BT	KT/BT	LV/DN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.50	1.79	0.70	1.96	2.01	1.71	0.68	0.70	1.41	1.50	0.73	1.28	3.16	2.18	2.18	3.60	1.68	2.53	2.72	5.31	5.31	5.31	5.31
CFM PER RUN HEAT	29	34	13	38	39	33	13	13	27	29	14	24	61	42	42	69	32	48	52	102	102	102	102
RM GAIN MBH	1.61	1.33	0.17	2.44	2.51	2.16	0.39	0.31	1.71	1.61	0.40	1.58	2.38	2.34	2.34	2.04	1.10	1.55	1.14	0.72	0.72	0.72	0.72
CFM PER RUN COOLING	50	41	5	75	77	66	12	10	52	50	12	49	73	72	72	63	34	48	35	22	22	22	22
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	0.14	0.14	0.14	0.14
ACTUAL DUCT LGH	53	51	38	29	57	58	34	46	36	63	49	15	36	39	28	26	46	37	31	34	21	17	35
EQUIVALENT LENGTH	180	170	150	140	140	190	140	120	200	180	170	130	110	120	120	130	130	100	160	150	80	140	140
TOTAL EFFECTIVE LENGTH	233	221	188	169	197	248	174	166	236	243	219	145	146	159	148	156	176	137	191	184	101	157	175
ADJUSTED PRESSURE	0.06	0.07	0.08	0.09	0.07	0.06	0.08	0.09	0.06	0.06	0.07	0.1	0.1	0.09	0.1	0.09	0.08	0.11	0.08	0.07	0.13	0.09	0.08
ROUND DUCT SIZE	5	5	4	6	6	6	4	4	6	5	4	4	5	5	5	5	4	4	5	6	6	6	6
HEATING VELOCITY (ft/min)	213	250	149	194	199	168	149	149	138	213	161	275	448	308	308	507	367	551	382	520	520	520	520
COOLING VELOCITY (ft/min)	367	301	57	382	393	337	138	115	265	367	138	562	536	529	529	463	390	551	257	112	112	112	112
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	A	B	B	D	C	B	D	D	A	D	B	A	A	A	D	C	C	D	A	B	D	C

RUN #	25	26	27
ROOM NAME	ENS	BED-3	BED-4
RM LOSS MBH	0.60	2.01	1.71
CFM PER RUN HEAT	11	39	33
RM GAIN MBH	0.44	2.51	2.16
CFM PER RUN COOLING	14	77	66
ADJUSTED PRESSURE	0.15	0.15	0.15
ACTUAL DUCT LGH	40	51	64
EQUIVALENT LENGTH	160	120	190
TOTAL EFFECTIVE LENGTH	200	171	254
ADJUSTED PRESSURE	0.07	0.09	0.06
ROUND DUCT SIZE	4	6	6
HEATING VELOCITY (ft/min)	126	199	168
COOLING VELOCITY (ft/min)	161	393	337
OUTLET GRILL SIZE	3X10	4X10	4X10
TRUNK	B	D	C



SUPPLY AIR TRUNK SIZE

	TRUNK	STATIC	ROUND	RECT			VELOCITY		TRUNK	STATIC	ROUND	RECT			VELOCITY	
	CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)	
TRUNK A	339	0.06	10.1	14	x	8	436		TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	540	0.06	12	18	x	8	540		TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	248	0.06	8.9	10	x	8	446		TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	603	0.06	12.5	18	x	8	603		TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	0	0.00	0	0	x	8	0		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	200	0.05	8.6	8	x	8	450
TRUNK X	1142	0.05	16.6	32	x	8	642
TRUNK Y	470	0.05	11.9	16	x	8	529
TRUNK Z	370	0.05	10.9	14	x	8	476
DROP	1142	0.05	16.6	32	x	10	685

RETURN AIR #	1	2	3	4	5	6	7	8								BR
AIR VOLUME	85	85	85	85	85	300	115	98	0	0	0	0	0	0	0	204
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	37	37	59	62	55	19	42	17	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	205	165	190	210	195	190	210	155	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	242	202	249	272	250	209	252	172	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.05	0.06	0.05	0.05	0.05	0.06	0.05	0.07	12.40	12.40	12.40	12.40	12.40	12.40	12.40	0.08
ROUND DUCT SIZE	6	6	6	6	6	9.6	7	6	0	0	0	0	0	0	0	7.7
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 5
SITE NAME: TRINIGROUPLO # 102607
OPT 5 BED

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>4</u> @ 10.6 cfm <u>42.4</u> cfm	
Kitchen & Bathrooms	<u>6</u> @ 10.6 cfm <u>63.6</u> cfm	
Other Rooms	<u>4</u> @ 10.6 cfm <u>42.4</u> cfm	
Table 9.32.3.A.	TOTAL <u>190.8</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		95.4 cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>190.8</u>	cfm
Less Principal Ventil. Capacity	<u>95.4</u>	cfm
Required Supplemental Capacity	<u>95.4</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE V150H	Location: BSMT
<u>95.4</u> cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
95.4 CFM	X 78 F	X 1.08	X 0.25

SUPPLEMENTAL FANS		BY INSTALLING CONTRACTOR	
Location	Model	cfm	HVI
ENS	BY INSTALLING CONTRACTOR	50	☒
ENS-2	BY INSTALLING CONTRACTOR	50	☒
ENS-3	BY INSTALLING CONTRACTOR	50	☒
PWD	BY INSTALLING CONTRACTOR	50	☒

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 @ 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 #:

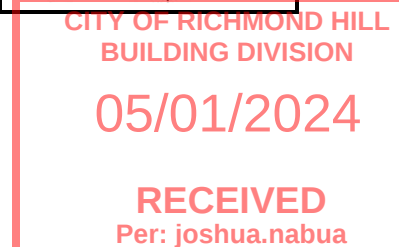
DESIGNER CERTIFICATION	
I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.	
Name:	HVAC Designs Ltd.
Signature:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	September-23

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#: 102607		Model: ROSE 5		Builder: GREENPARK HOMES																																																								
				Date: 9/21/2023																																																								
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>1531</td> <td>9</td> <td>13779</td> </tr> <tr> <td>First</td> <td>1531</td> <td>10</td> <td>15310</td> </tr> <tr> <td>Second</td> <td>1818</td> <td>9</td> <td>16362</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>45,451.0 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>1287.0 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1531	9	13779	First	1531	10	15310	Second	1818	9	16362	Third	0	9	0	Fourth	0	9	0	Total:			45,451.0 ft³	Total:			1287.0 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 30%;">0.352</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;"> <thead> <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> </thead> <tbody> <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> </tbody> </table>		WINTER NATURAL AIR CHANGE RATE	0.352	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)																																																									
Bsmt	1531	9	13779																																																									
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Fourth	0	9	0																																																									
Total:			45,451.0 ft³																																																									
Total:			1287.0 m³																																																									
WINTER NATURAL AIR CHANGE RATE	0.352																																																											
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																																																								
5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.352 x 357.51 x 43 °C x 1.2 = 6524 W = 22261 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.110 x 357.51 x 7 °C x 1.2 = 335 W = 1143 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 95 CFM x 78 °F x 1.08 x 0.25 = 2004 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 95 CFM x 13 °F x 1.08 x 0.25 = 330 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; vertical-align: middle;">22,261</td> <td>10,092</td> <td>1.103</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>12,642</td> <td>0.528</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>14,185</td> <td>0.314</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>					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	22,261	10,092	1.103	2	0.3	12,642	0.528	3	0.2	14,185	0.314	4	0	0	0.000	5	0	0	0.000																														
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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 5	OPT 5 BED	BUILDER: GREENPARK HOMES
SFQT: 3349	LO# 102607	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	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	45451.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 61.0 ft	WIDTH: 34.0 ft	EXPOSED PERIMETER:	190.0 ft

2012 OBC - COMPLIANCE PACKAGE

Component

Compliance Package A1

Nominal	Min. Eff.
60	59.22
31	27.65
31	29.80
22	17.03
20 ci	21.12
-	-
10	10
10	11.13
0.28	-
0.49	-
96%	-
75%	-
0.8	-

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



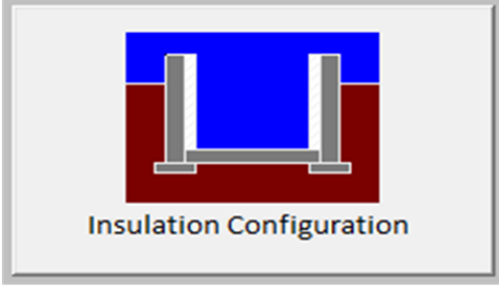
CITY OF RICHMOND HILL
BUILDING DIVISION

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):	18.6	 Insulation Configuration
Floor Width (m):	10.4	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	3.0	
Door Area (m ²):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1896

TYPE: ROSE 5
LO# 102607

OPT 5 BED

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):	7.62			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1287.0			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1715.6 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	45.0	45.0		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.352			
Cooling Air Leakage Rate (ACH/H):	0.110			

TYPE: ROSE 5
LO# 102607

OPT 5 BED

Michael O'Rourke BCIN# 19669

CITY OF RICHMOND HILL
BUILDING DIVISION

05/01/2024


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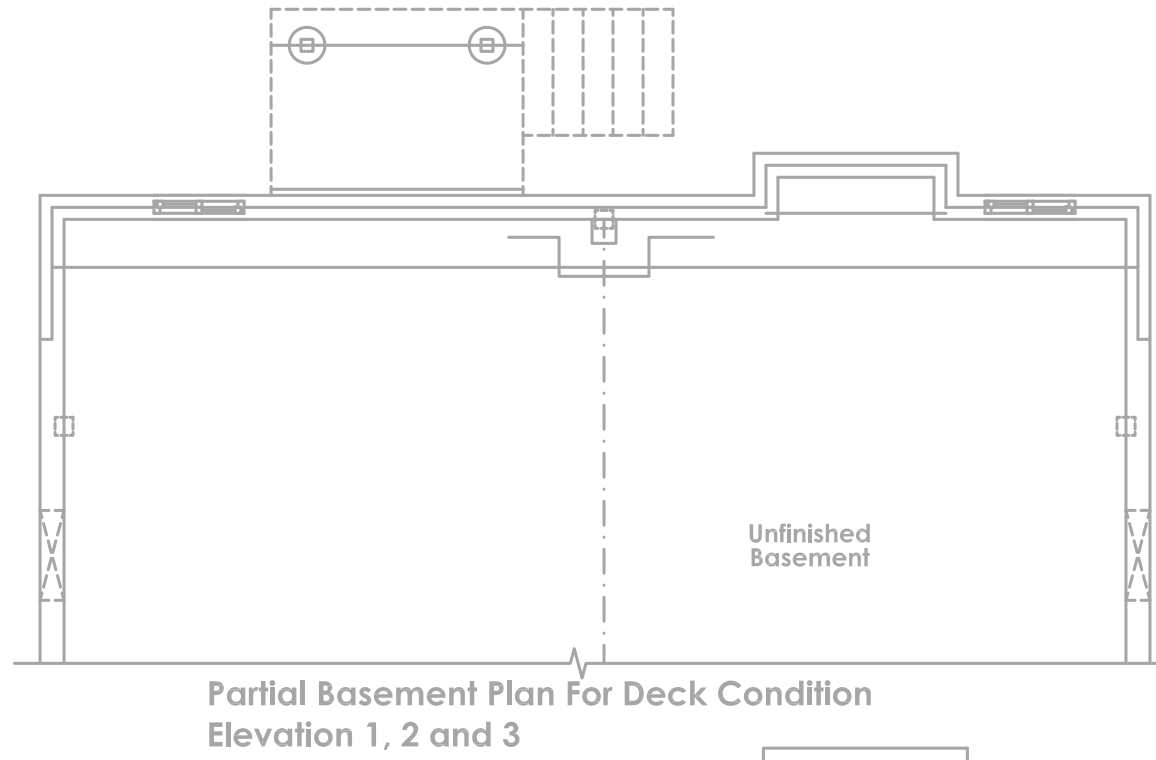
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INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. ALL SUPPLY BRANCH OUTLETS SHALL BE EQUIPPED WITH MANUAL BALANCING DAMPER. DUCTWORK WHICH PASSES THROUGH THE GARAGE OR UNHEATED SPACES SHALL BE ADEQUATELY INSULATED AND GAS-PROOFED

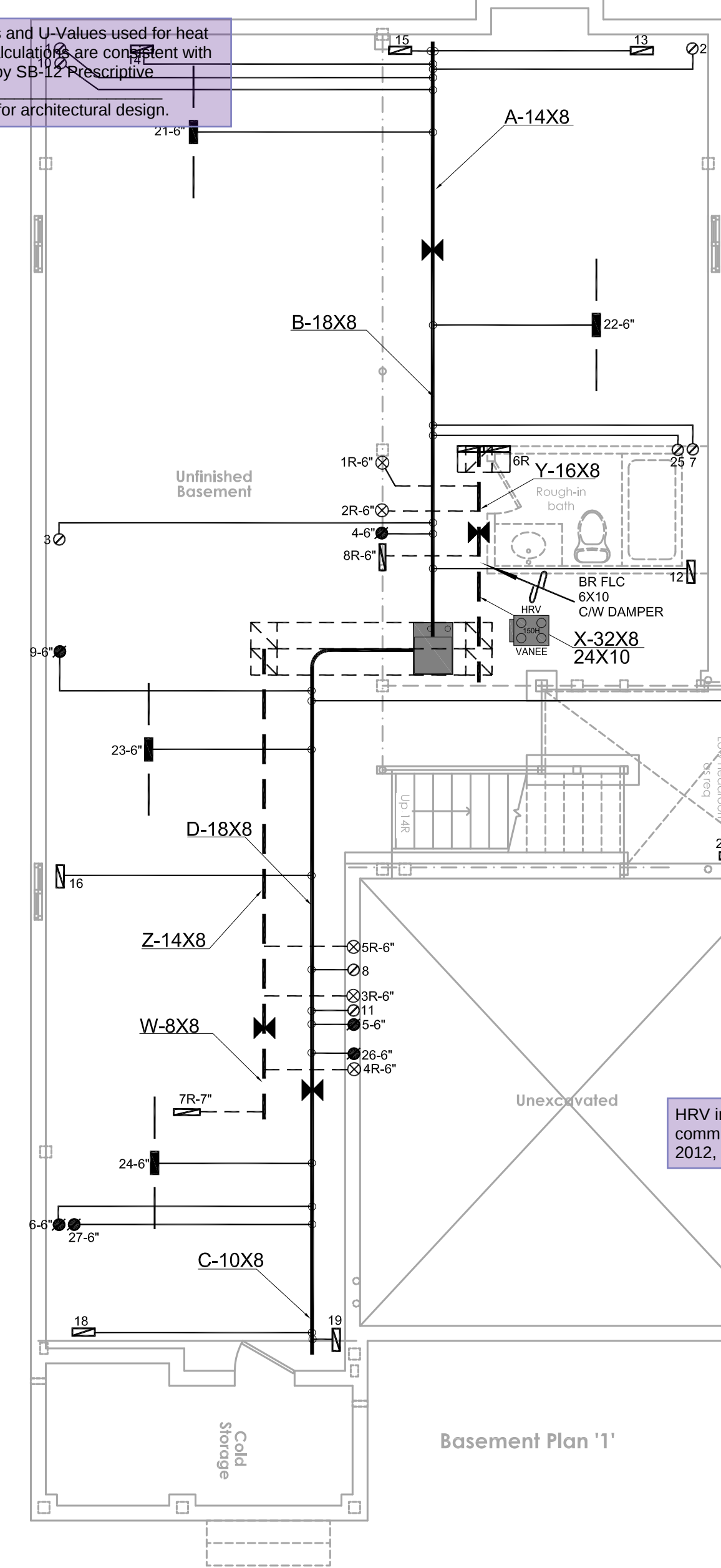
ALL S/A DIFFUSERS "4x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

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)



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.



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)

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

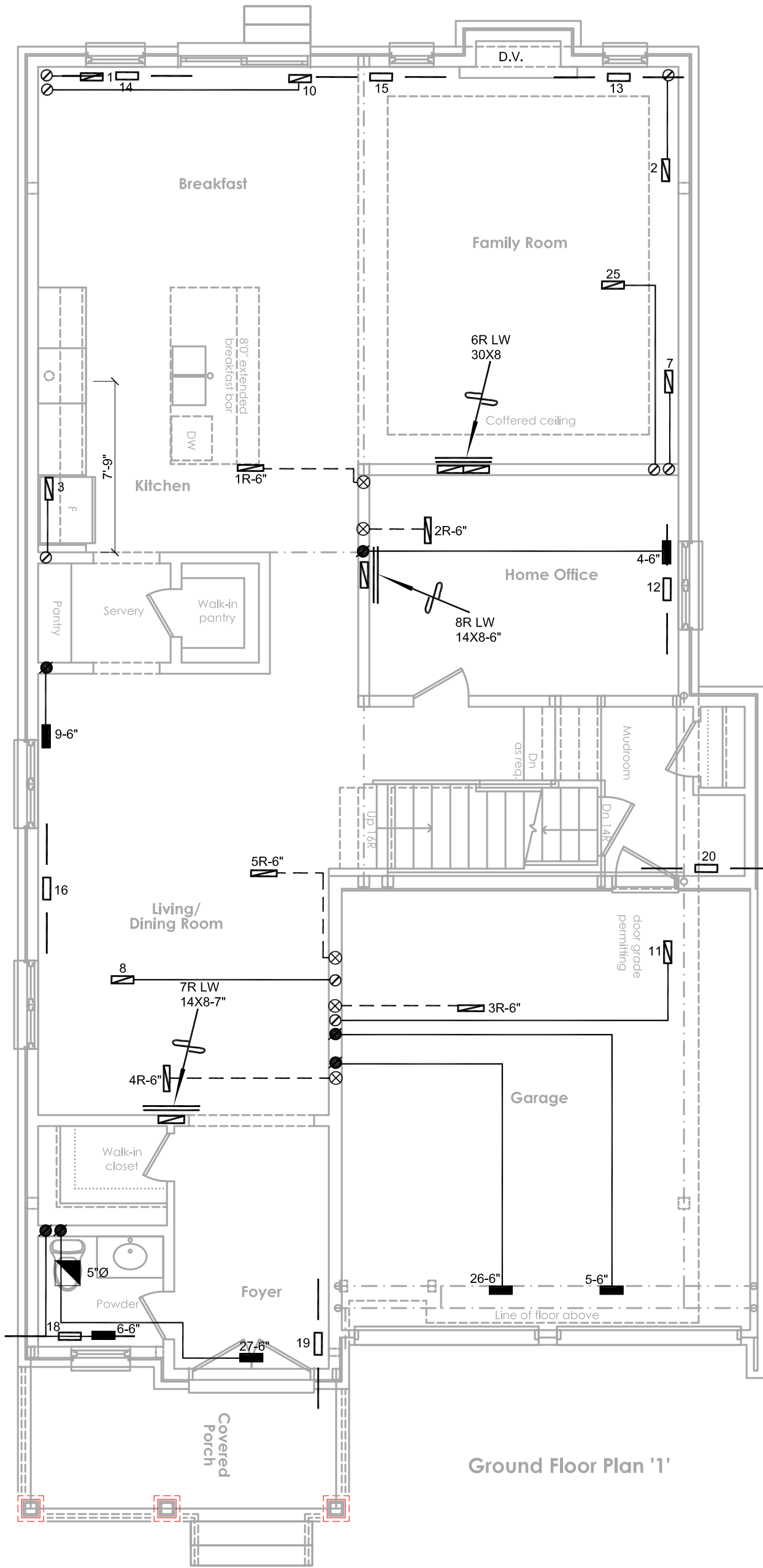
8. HRV installation, testing, startup and commissioning shall be in compliance with OBC 2012, Div.B 9.32.3.11, 9.32.3.11(7)&(10)

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.

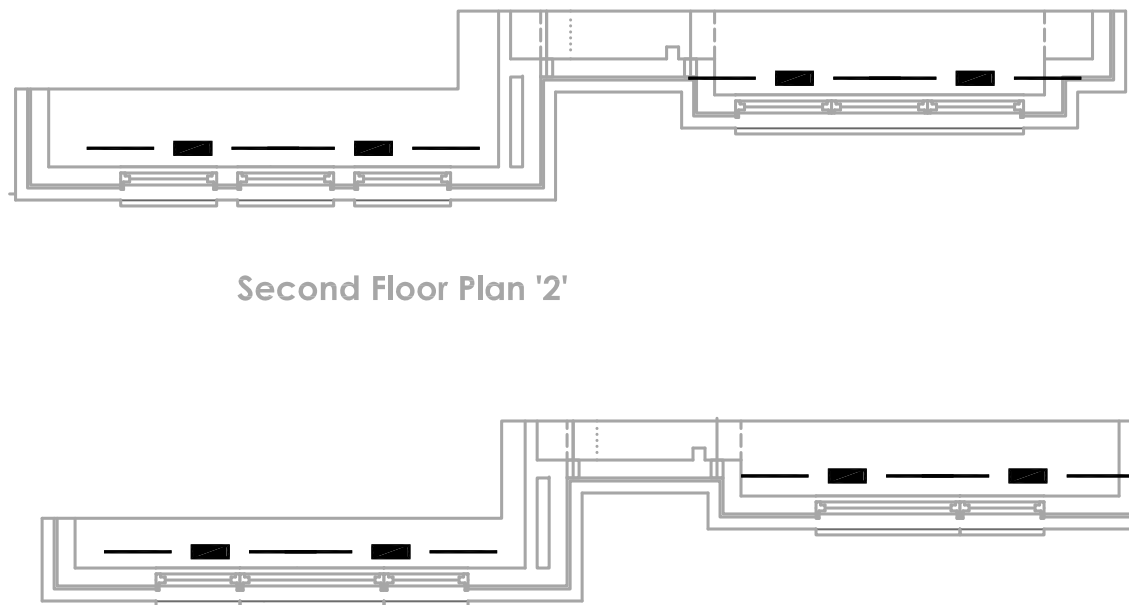
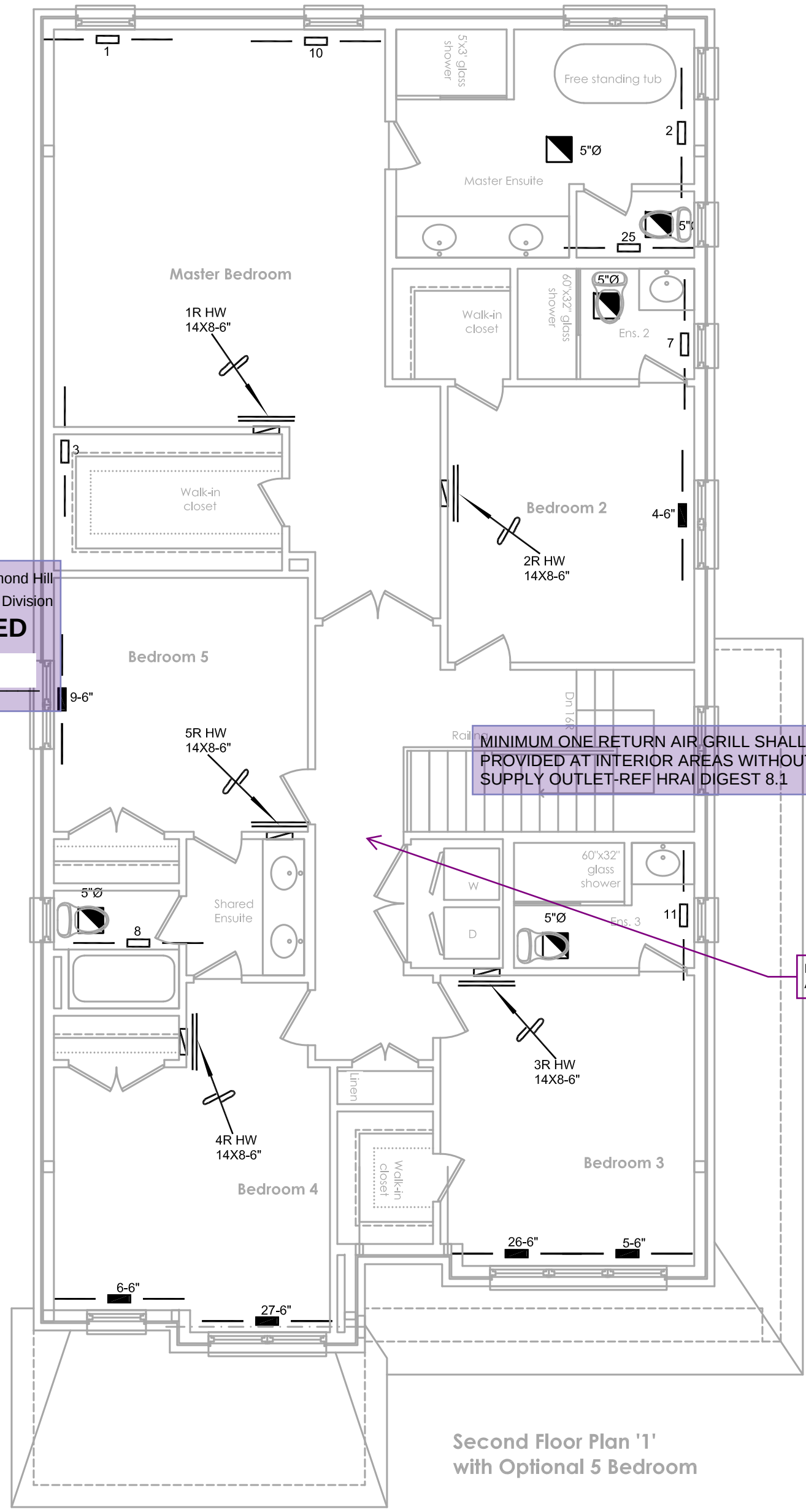
City of Richmond Hill Building Division
REVIEWED
By: **PV** Date: **May/15/2024**
Building Permit #: **RM#24-00019**
All construction shall comply with the Ontario Building Code and all other applicable statutory regulations. The reviewed documents must be kept on site at all times.
Building inspection line: 905-771-5465 (24 hr)
buildinginspectors@richmondhill.ca
Building inquiry line 905-771-8810
building@richmondhill.ca



Ground Floor Plan '2'

Ground Floor Plan '3'

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



Second Floor Plan '3'

HEAT LOSS 61548 BTU/H		# OF RUNS		S/A	R/A	FANS
UNIT DATA		3RD FLOOR				
MAKE	GOODMAN	2ND FLOOR		14	5	5
MODEL	GMEC960804CNA	1ST FLOOR		8	3	2
INPUT	80.0 MBTU/H	BASEMENT		4	1	0
OUTPUT	76.8 MBTU/H	ALL S/A DIFFUSERS 4"x10" UNLESS NOTED OTHERWISE ON LAYOUT, ALL S/A RUNS 1/2" UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A				
COOLING	3.0 TONS					
FAN SPEED	cfm @ 0.6" w.c.					
1142						

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

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

2					
1	ISSUED FOR PERMIT	SEPT/23	YY		
Rev	Revision	Date	By		

SB-12 PACKAGE

Michael Offutt has reviewed and attests responsibility for the design work and is qualified under division C.22 of the building code.

Michael Offutt BCMA 1998 HVAC Design Ltd.

Client: GREENPARK HOMES

Project Name: TRINITY GROUP RICHMOND HILL, ONTARIO

ROSE 5 - OPT 5 BED 3349 SQFT

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Scale: 3/16"=1'-0"

Date: SEPTEMBER 2023

LO # 102607

Per: joshua.nabulsi

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Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services

Client: GREENPARK HOMES
Project Name: TRINITY GROUP RICHMOND HILL, ONTARIO
ROSE 5 - OPT 5 BED 3349 SQFT

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