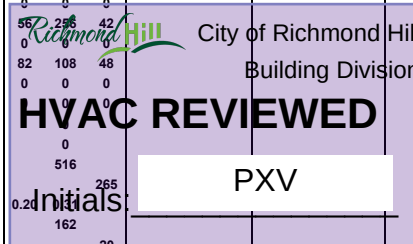


SITE NAME: TRINIGROUP				BUILDER: GREENPARK HOMES				TYPE: ROSE 5				GFA: 3349				DATE: Sep-23 LO# 102606				WINTER NATURAL AIR CHANGE RATE 0.352 SUMMER NATURAL AIR CHANGE RATE 0.110				HEAT LOSS ΔT °F. 78 HEAT GAIN ΔT °F. 13				CSA-F280-12 SB-12 PACKAGE A																							
ROOM USE				MBR				ENS				WIC				BED-2				BED-3				BED-4				ENS-2				ENS-4				FLEX				ENS-3											
EXP. WALL				36				26				10				17				26				36				6				6				11				7											
CLG. HT.				9				9				9				9				9				9				9				9				9				9											
FACTORS																																																			
GRS.WALL AREA				LOSS				GAIN				324				234				90				153				234				324				54				54				99				63			
GLAZING				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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	152	112	16	349	256	0	0	0														
EAST				21.8	41.6	22	479	914	16	349	665	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														
SOUTH				21.8	24.9	0	0	0	14	305	349	0	0	0	32	697	797	0	0	0	0	0	0	0	0	0	7	152	174	0	0	0	0	0	0	7	152	174													
WEST				21.8	41.6	0	0	0	0	0	0	0	0	0	0	0	0	52	1133	2161	48	1046	1994	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													
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													
NET EXPOSED WALL				4.6	0.8	302	1380	227	204	932	153	90	411	68	121	553	91	182	831	137	276	1261	207	47	215	35	47	215	35	83	379	62	56	256	42	56	256	42													
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													
EXPOSED CLG				1.3	0.6	324	426	190	175	230	103	94	123	55	185	243	109	208	273	122	222	292	130	80	105	47	92	121	54	262	344	154	82	108	48	82	108	48													
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													
EXPOSED FLOOR				2.6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	208	543	89	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				0							
SLAB ON GRADE HEAT LOSS								0				0				0				0				0				0				0				0				0				0				0			
SUBTOTAL HT LOSS								2285				1815				535				1493				2781				2598				472				488				1072				516							
SUB TOTAL HT GAIN								1332				1270				123				996				2509				2332				257				201				472				265							
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		0.20	0.31		0.20	0.31		0.20	0.31													
AIR CHANGE HEAT LOSS								717				570				168				469				873				816				148				153				337				162							
AIR CHANGE HEAT GAIN								99				94				9				74				186				173				19				15				35				20							
DUCT LOSS								0				0				0				0				365				0				0				0				0				0				0			
DUCT GAIN								0				0				0				0				345				0				0				0				0				0				0			
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													
HEAT GAIN APPLIANCES/LIGHTS								516				0				0				516				516				516				0				0				516				0							
TOTAL HT LOSS BTU/H								3002				2385				703				1962				4019				3414				621				641				1409				678							
TOTAL HT GAIN x 1.3 BTU/H								3155				1773				172				2375				4936				4241				358				281				1330				369							



ROOM USE			OFFICE		FML		KT/BT		LV/DN		LAUN		PWD		FOY		MUD						WOD		BAS	
EXP. WALL			10		37		39		35		0		18		23		32						44		190	
CLG. HT.			10		10		10		10		9		10		10		10						9		9	
GRS.WALL AREA	FACTORS																									
	LOSS	GAIN																								
GLAZING			100		370		390		350		0		180		230		320						396		1272	
			LOSS GAIN		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	0	0	0	0	0	0	0	0	0	0	0	0	8	174	128
EAST	21.8	41.6	0	0	0	0	22	479	914	62	1351	2576	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	0	4	87	100
WEST	21.8	41.6	0	0	0	0	0	0	0	0	0	0	0	0	0	16	349	665	22	479	914	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	14	287	47	20	411	68	0	0	20	411	68
NET EXPOSED WALL	4.6	0.8	78	356	59	348	1590	262	328	1498	247	306	1398	230	0	0	164	749	123	194	886	146	300	1371	225	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	244	899	148
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	94	123	55	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
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
BASEMENT/CRAWL HEAT LOSS																										
SLAB ON GRADE HEAT LOSS																										
SUBTOTAL HT LOSS																										
SUB TOTAL HT GAIN																										
LEVEL FACTOR / MULTIPLIER																										
AIR CHANGE HEAT LOSS																										
AIR CHANGE HEAT GAIN																										
DUCT LOSS																										
DUCT GAIN																										
HEAT GAIN PEOPLE																										
HEAT GAIN APPLIANCES/LIGHTS																										
TOTAL HT LOSS BTU/H																										
TOTAL HT GAIN x 1.3 BTU/H																										

TOTAL HEAT GAIN BTU/H:

36983

TONS: 3.08

LOSS DUE TO VENTILATION LOAD BTU/H: 1670

STRUCTURAL HEAT LOSS: 59538

TOTAL COMBINED HEAT LOSS BTU/H: 61208

05/01/2024

SITE NAME: TRINIGROUP
BUILDER: GREENPARK HOMES

TYPE: ROSE 5

DATE: Sep-23

GFA: 3349 LO# 102606

HEATING CFM 1142
TOTAL HEAT LOSS 59,538
AIR FLOW RATE CFM 19.18
COOLING CFM 1142
TOTAL HEAT GAIN 36,708
AIR FLOW RATE CFM 31.11furnace pressure 0.7
furnace filter 0.14
a/c coil pressure 0.26
available pressure for s/a & r/a 0.30#*GOODMAN
GMEC960804CNA
FAN SPEED 80AFUE = 96 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = 76,800

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	15	8	4
R/A	0	0	5	3	1

plenium 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 0.12LOW 868
MEDLOW 978
MEDIUM 1142
MEDIUM HIGH 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	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	ENS-4	FLEX	MBR	ENS-3	OFFICE	FML	KT/BT	KT/BT	LV/DN	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.50	1.79	0.70	1.96	2.01	1.71	0.62	0.64	1.41	1.50	0.68	1.28	3.16	2.18	2.18	3.60	0.16	1.68	2.53	2.72	5.31	5.31	5.31	5.31
CFM PER RUN HEAT	29	34	13	38	39	33	12	12	27	29	13	24	61	42	42	69	3	32	48	52	102	102	102	102
RM GAIN MBH.	1.58	1.33	0.17	2.38	2.47	2.12	0.36	0.28	1.33	1.58	0.37	1.52	2.31	2.31	2.31	1.97	0.75	1.10	1.55	1.08	0.71	0.71	0.71	0.71
CFM PER RUN COOLING	49	41	5	74	77	66	11	9	41	49	11	47	72	72	72	61	23	34	48	34	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	0.15	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	15	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	170	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	185	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	0.08	0.11	0.08	0.07	0.13	0.09	0.08
ROUND DUCT SIZE	5	5	4	6	6	6	4	4	5	5	4	4	5	5	5	5	4	4	4	5	6	6	6	6
HEATING VELOCITY (ft/min)	213	250	149	194	199	168	138	138	198	213	149	275	448	308	308	507	34	367	551	382	520	520	520	520
COOLING VELOCITY (ft/min)	360	301	57	377	393	337	126	103	301	360	126	539	529	529	529	448	264	390	551	250	112	112	112	112
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	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	B	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	2.47	2.12
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

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	339	0.06	10.1	14	x	8	436	TRUNK G	0	0.00	0	0	8
TRUNK B	542	0.06	12	18	x	8	542	TRUNK H	0	0.00	0	0	8
TRUNK C	248	0.06	8.9	10	x	8	446	TRUNK I	0	0.00	0	0	8
TRUNK D	601	0.06	12.5	18	x	8	601	TRUNK J	0	0.00	0	0	8
TRUNK E	0	0.00	0	0	x	8	0	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	200	0.05	8.6	8	x	8
TRUNK X	1142	0.05	16.6	32	x	8
TRUNK Y	470	0.05	11.9	16	x	8
TRUNK Z	370	0.05	10.9	14	x	8
DROP	1142	0.05	16.6	32	x	8

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: TRINIGROUP

LO # 102606

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-3	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 @ 32 deg F (0 deg C)	☒ HVI Approved

LOCATION OF INSTALLATION	
Lot:	Concession
Township	Richmond Hill City of Richmond Hill
Address	Building Division
Roll #	15-010-0-0000-00
BUILDER:	GREENPAID PXV
Name:	Initials:
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

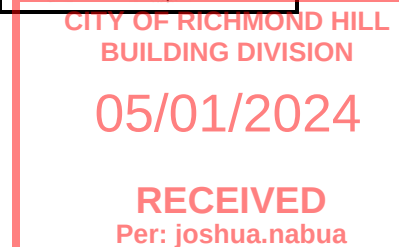
Michael O'Rourke

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#: 102606		Model: ROSE 5		Builder: GREENPARK HOMES																																																								
				Date: 9/20/2023																																																								
Volume Calculation			Air Change & Delta T Data																																																									
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$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 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																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 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 5**BUILDER:** GREENPARK HOMES**SFQT:** 3349**LO#** 102606**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 (ft ³):	45451.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	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.**

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

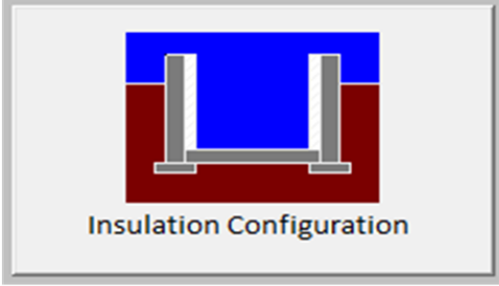
CITY OF RICHMOND HILL
BUILDING DIVISION

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# 102606

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	City of Richmond Hill Building Division		
Region:	Richmond Hill			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding		Initials: PXV		
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		
	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):	0.352			
Cooling Air Leakage Rate (ACH/H):	0.110			

TYPE: ROSE 5
LO# 102606

Michael O'Rourke BCIN# 19669

CITY OF RICHMOND HILL
BUILDING DIVISION

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ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD. & MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

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

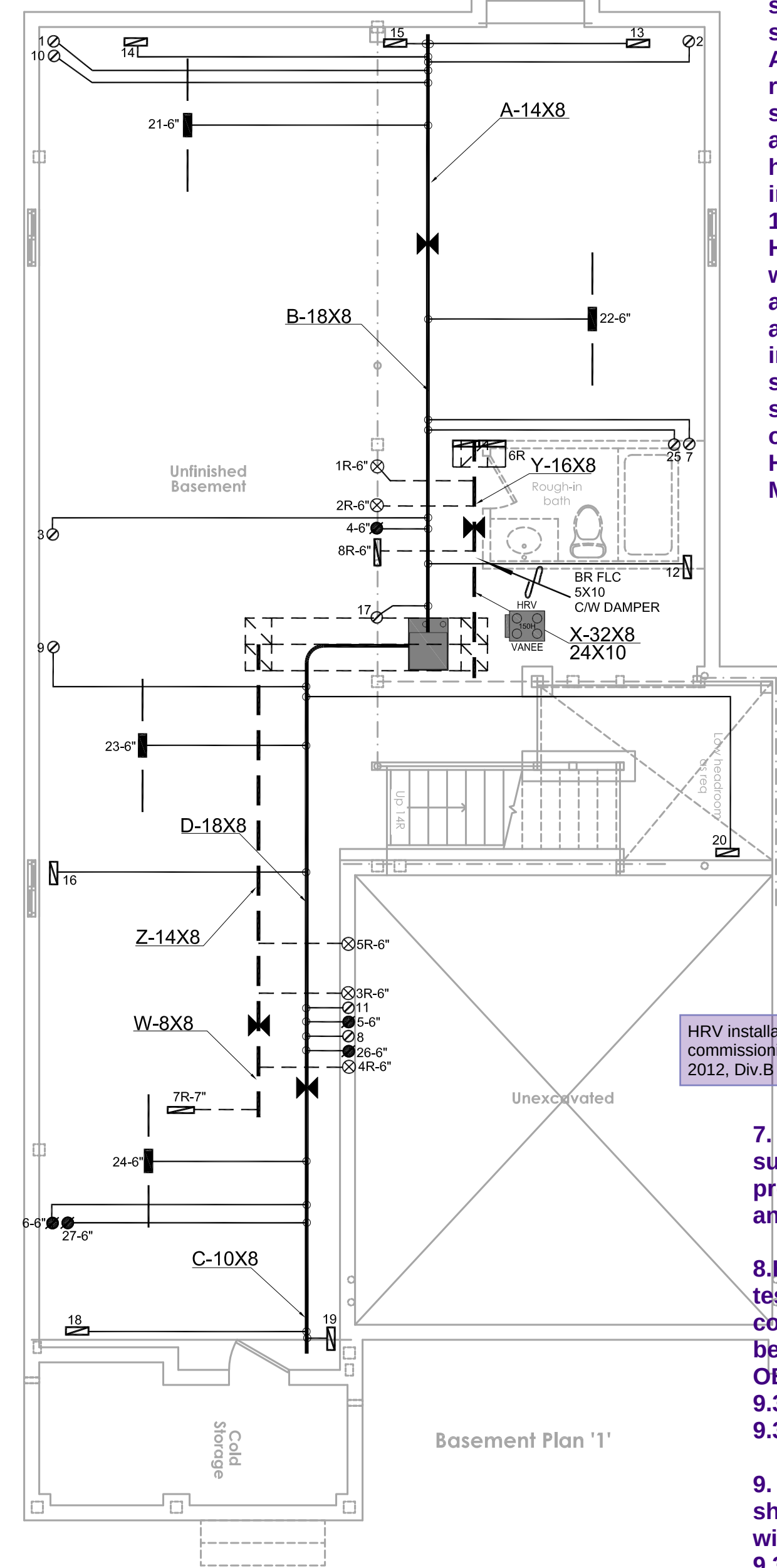
ALL S/A DIFFUSERS "4x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

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.

Partial Basement Plan For Deck Condition
Elevation 1, 2 and 3



Basement Plan '1'

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)

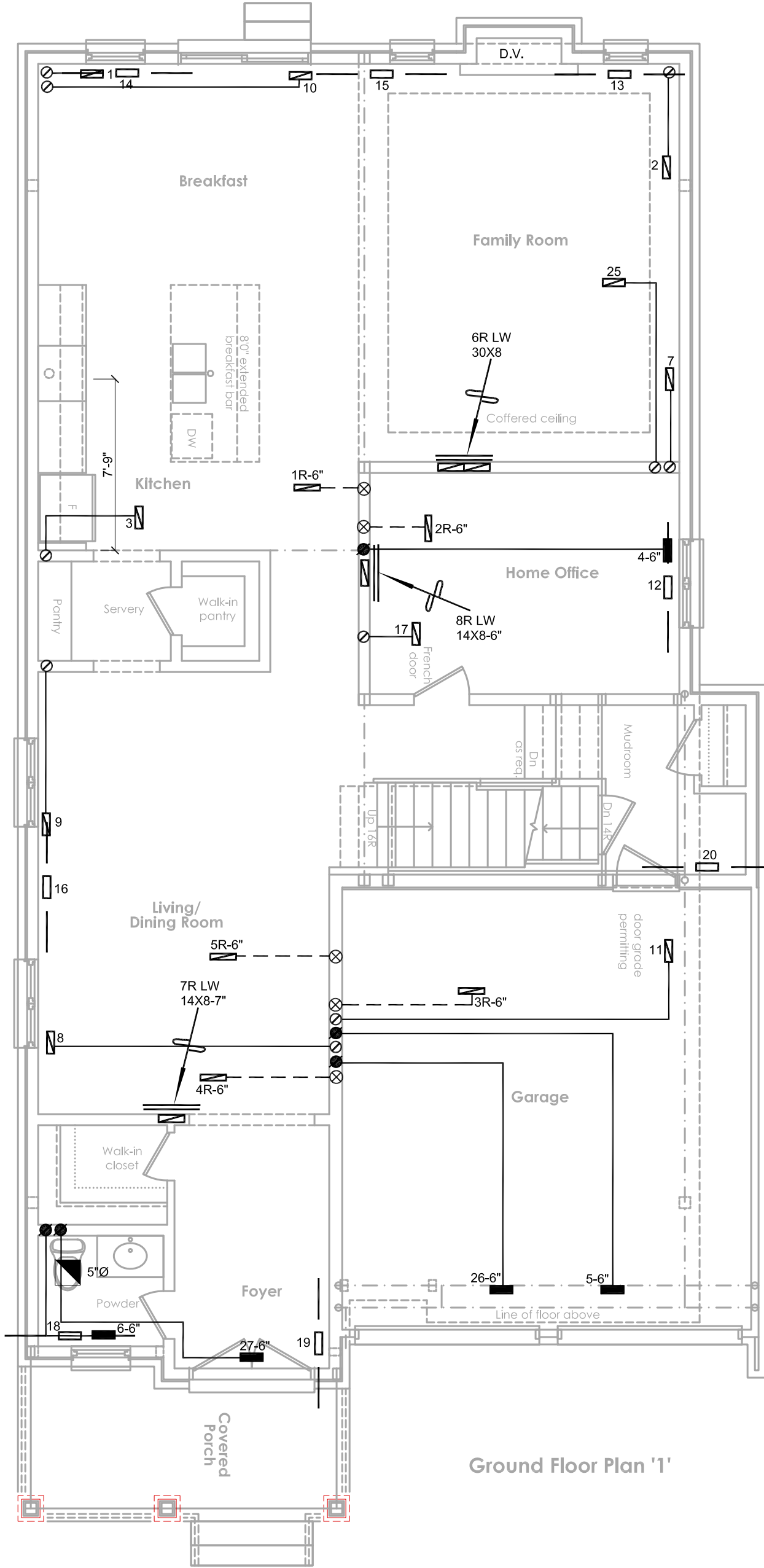
9. HRV duct connection shall be in compliance with OBC 2012 Div.B 9.32.3.6(3) & 9.32.3.4(7).

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).

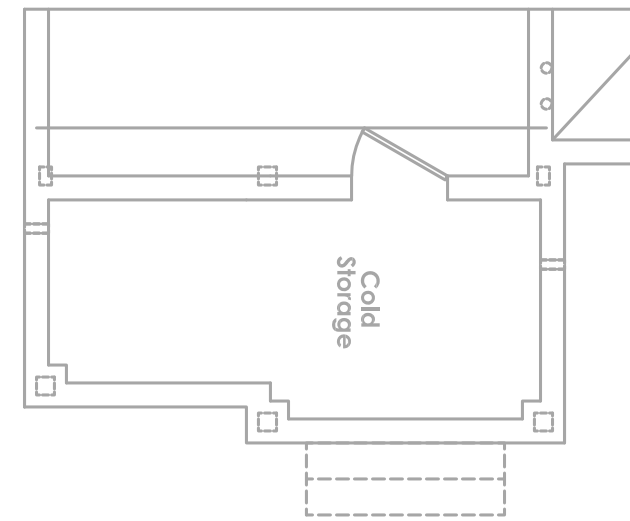
13. Exterior insulation effective R-Value for wall, roof or exposed floor shall be maintained at the respective location where duct or sanitary pipes are routed inside exterior envelope.

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.

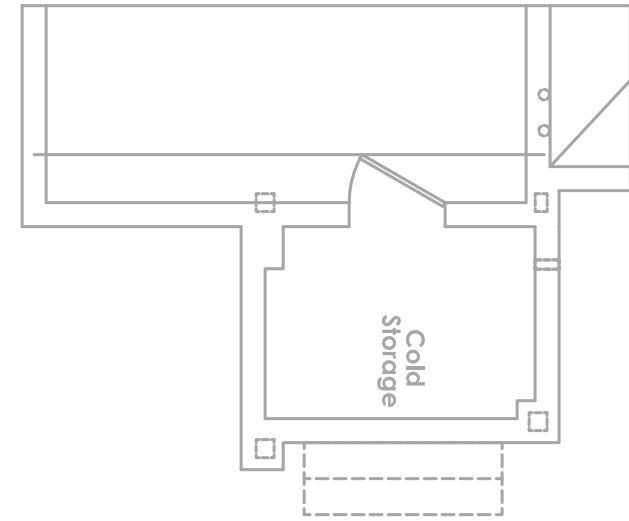
15. For simplified HRV/ERV installation, with stale air and fresh air connected to return air plenum, stale air intake and fresh air supply shall be separated minimum 3' or as recommended by HRV/ERV Manufacturer.



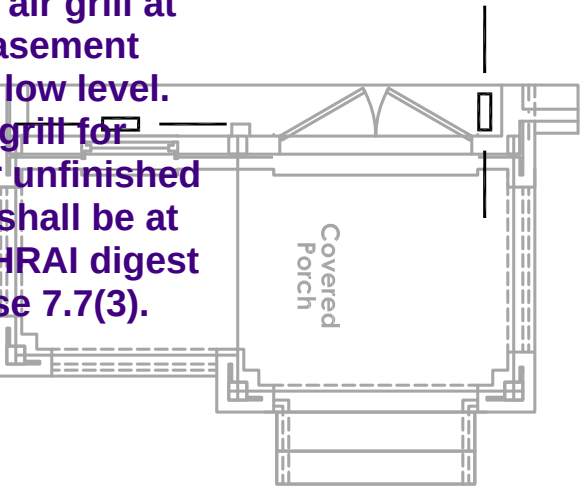
Ground Floor Plan '1'



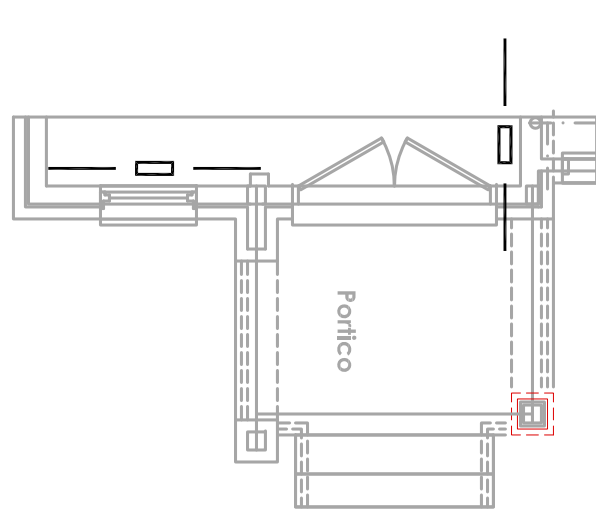
Basement Plan '2'



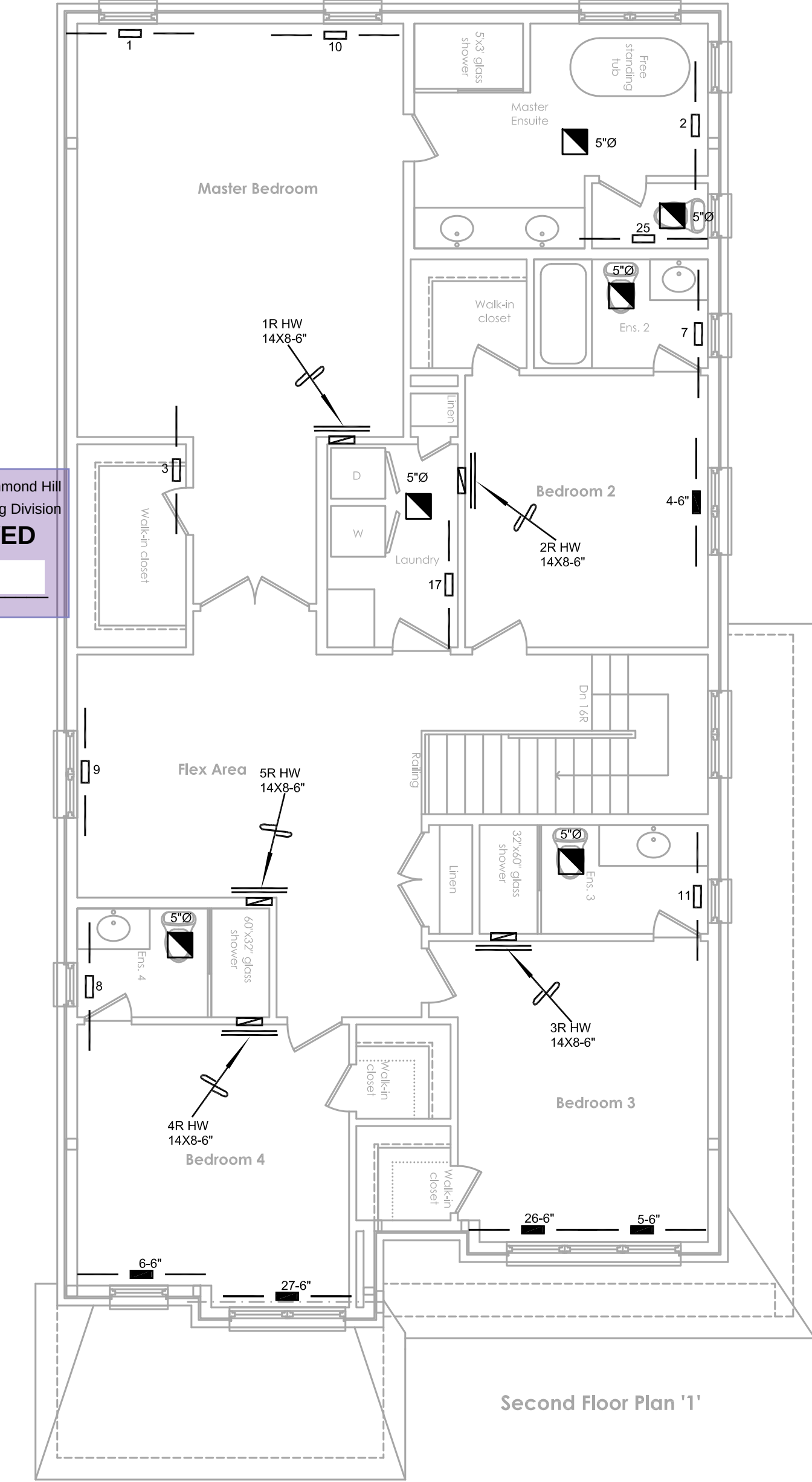
Basement Plan '3'



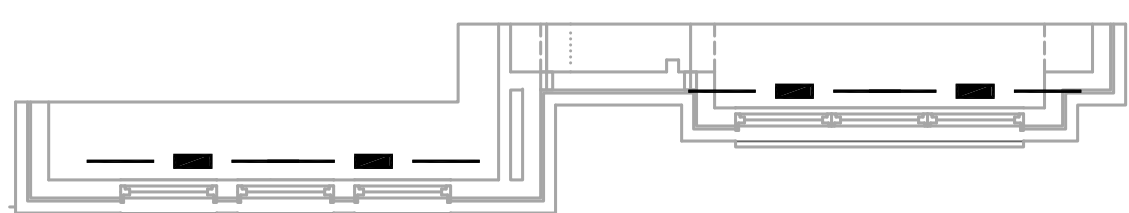
Ground Floor Plan '2'



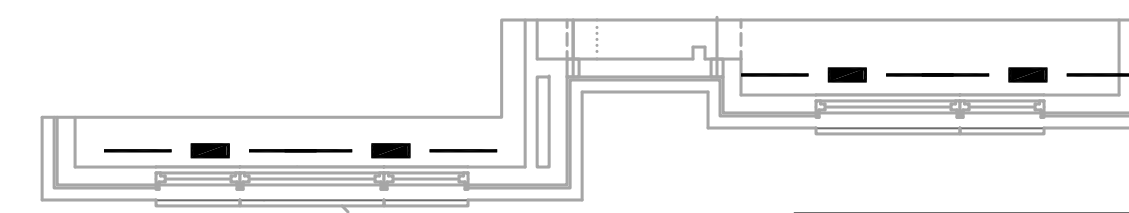
Ground Floor Plan '3'



Second Floor Plan '1'



Second Floor Plan '2'



Second Floor Plan '3'

HEAT LOSS 61208 BTU/H	# OF RUNS	S/A	R/A	FANS
UNIT DATA				
MAKE GOODMAN	3RD FLOOR			
MODEL GMEC960804CNA	2ND FLOOR	15	5	6
INPUT 80.0 MBTU/H	1ST FLOOR	8	3	2
OUTPUT 76.8 MBTU/H	BASEMENT	4	1	0
COOLING 3.0 TONS				
FAN SPEED 1142 cfm @ 0.6" w.c.				
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				

Richmond Hill

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)
buildinginspections@richmondhill.ca
Building inquiry line: 905-771-8810
building@richmondhill.ca

Richmond Hill

City of Richmond Hill
Building Division

HVAC REVIEWED

Initials: PXV

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
	LIN TRIP by REVERSOMATIC
DV	DIRECT VENT
LW	LOW WALL
HW	HIGH WALL
CLG.	CEILING
Z.D.	CEILING 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 YV
Rev	Revision	Date By

SB-12 PACKAGE

A1

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

Michael Offutt BCMA 1988 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

TRINITY GROUP
RICHMOND HILL, ONTARIO
ROSE 5
3349 SQFT

Sheet Title

HVAC

Drawn By

YV

Scale

3/16"=1'-0"

Date

SEPTEMBER 2023

LO #

102606

HEATING LAYOUT

BUILDING DIVISION

05/01/2024

RECEIVED

Per: joshua.nabul