

20.88 btu/ft2

SITE NAME: ROUNDEL HOMES INC				DATE: May-21				WINTER NATURAL AIR CHANGE RATE 0.361				HEAT LOSS AT °F. 78				CSA-F280-12			
BUILDER: GREENPARK HOMES				LO# 90733				SUMMER NATURAL AIR CHANGE RATE 0.113				HEAT GAIN AT °F. 13				SB-12 PACKAGE A1			
TYPE: PINETREE 2				GFA: 2601															
ROOM USE			MBR		ENS		BED-2		BED-3		BED-4		BATH		ENS-4				
EXP. WALL			40		8		29		24		45		6		10				
CLG. HT.			9		9		9		9		9		9		9				
FACTORS																			
GRS.WALL AREA	LOSS	GAIN	360		72		261		216		405		54		90				
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
EAST	21.8	41.6	0	0	0	0	0	0	42	915	1745	36	784	1496	0	0	0	0	0
SOUTH	21.8	24.9	9	196	224	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST	21.8	41.6	22	479	914	16	349	665	16	349	665	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
DOORS	25.8	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.6	0.8	329	1503	247	56	256	42	245	1119	184	174	795	131	369	1686	277	54	247
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
EXPOSED CLG	1.3	0.6	318	418	187	156	205	92	202	265	119	235	309	138	282	370	166	70	92
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
EXPOSED FLOOR	2.6	0.4	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			2596		809		1733		2488		2840		339		813				
SUB TOTAL HT GAIN				1572	799			968	2091		1939		82			510			
LEVEL FACTOR / MULTIPLIER	0.20	0.30			0.20	0.30		0.20	0.30		0.20	0.30		0.20	0.30				
AIR CHANGE HEAT LOSS			769		240			513	737		841		100			241			
AIR CHANGE HEAT GAIN				124	63			77	166		153		6			40			
DUCT LOSS			0		0			0	323		0		0			0			
DUCT GAIN			0		0			0	310		0		0			0			
HEAT GAIN PEOPLE	240		2	480	0			1	240		1	240	0	0		0			
HEAT GAIN APPLIANCES/LIGHTS				601	0				601			601	0	0		0			
TOTAL HT LOSS BTU/H			3365		1049		2246		3548		3681		439		1053				
TOTAL HT GAIN x 1.3 BTU/H			3611		1120		2450		4429		3813		115		716				

Initials: PXV

HVAC REVIEWED

Building Division

City of Richmond Hill

ROOM USE			DIN		KT/FM		LAUN		FOY		MUD		WOD		BAS	
EXP. WALL			57		75		8		29		13		43		174	
CLG. HT.			11		11		9		11		11		9		9	
FACTORS																
GRS.WALL AREA	LOSS	GAIN	627		825		72		319		143		387		1173	
GLAZING			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
EAST	21.8	41.6	0	0	0	0	11	240	457	6	131	249	0	0	0	0
SOUTH	21.8	24.9	32	697	797	0	0	0	0	0	0	0	0	0	8	174
WEST	21.8	41.6	0	0	0	69	1503	2867	0	0	0	0	0	0	0	199
SKYLT.	38.1	101.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	25.8	4.3	0	0	0	21	543	89	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.6	0.8	595	2718	447	735	3358	552	61	279	46	273	1247	205	123	562
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	0	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	60	79	35	20	26	12	0	0
NO ATTIC EXPOSED CLG	2.8	1.3	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	60	157	26	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS						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
SUBTOTAL HT LOSS				3415		5404		754		2438		1079		0		5877
SUB TOTAL HT GAIN					1244			3509				636		177		
LEVEL FACTOR / MULTIPLIER		0.30	0.45			0.30	0.45		0.20	0.30		0.30	0.45		730	522
AIR CHANGE HEAT LOSS				1521			2407			223			1086			9157
AIR CHANGE HEAT GAIN					98			278			45		50			99
DUCT LOSS				0			0		98				0			0
DUCT GAIN					0			0			121		0			0
HEAT GAIN PEOPLE	240		0		0	0		0	0		0	0	0		0	0
HEAT GAIN APPLIANCES/LIGHTS					601		601				601		0		0	601
TOTAL HT LOSS BTU/H				4936			7810			1075		3524		1559		17172
TOTAL HT GAIN x 1.3 BTU/H				2526			5703			1729			893		249	1589

TOTAL HEAT GAIN BTU/H: 30166 TONS: 2.51

LOAD DUE TO VENTILATION LOAD BTU/H: 1670

STRUCTURAL HEAT LOSS: 52662

TOTAL COMBINED HEAT LOSS BTU/H: 54332

Michael O'Rourke

Per: joshua.nabua

RECEIVED

9/12/2022

SITE NAME: ROUNDEL HOMES INC
BUILDER: GREENPARK HOMES

TYPE: PINETREE 2

DATE: May-21

GFA: 2601 LO# 90733

HEATING CFM 928 COOLING CFM 928
TOTAL HEAT LOSS 52,662 TOTAL HEAT GAIN 29,891
AIR FLOW RATE CFM 17.62 AIR FLOW RATE CFM 31.05

furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure for s/a & r/a 0.35

#GOODMAN
GMEC960603BNA 60

AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 57,600

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	11	6	4
R/A	0	0	5	2	1

All S/A diffusers 4"x10" unless noted otherwise on layout.
All S/A runs 5"Ø unless noted otherwise on layout.

plenum pressure s/a 0.18 r/a pressure 0.17
max s/a dif press. loss 0.02 r/a grille press. Loss 0.02
min adjusted pressure s/a 0.16 adjusted pressure r/a 0.15

FAN SPEED LOW
MEDLOW
MEDIUM 928
MEDIUM HIGH 1017
HIGH 1131

DESIGN CFM = 928
CFM @ .6" E.S.P.

TEMPERATURE RISE 57 °F

RUN #	1	2	4	5	6	7	8	9	10	11	12	14	15	16	17	19	20	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	BATH	BED-3	BED-4	MBR	ENS-4	DIN	KT/FM	KT/FM	KT/FM	LAUN	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.68	1.05	2.25	1.77	1.84	0.44	1.77	1.84	1.68	1.05	4.94	2.60	2.60	2.60	1.07	3.52	1.56	4.59	4.59	4.59	4.59
CFM PER RUN HEAT	30	18	40	31	32	8	31	32	30	19	87	46	46	46	19	62	27	81	81	81	81
RM GAIN MBH	1.81	1.12	2.45	2.21	1.91	0.11	2.21	1.91	1.81	0.72	2.53	1.90	1.90	1.90	1.73	0.89	0.25	0.63	0.63	0.63	0.63
CFM PER RUN COOLING	56	35	76	69	59	4	69	59	56	22	78	59	59	59	54	28	8	20	20	20	20
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	52	38	32	45	77	22	49	82	46	81	53	42	35	22	45	53	12	36	13	40	57
EQUIVALENT LENGTH	170	140	110	130	180	140	140	200	140	200	150	140	130	80	120	120	160	140	110	160	110
TOTAL EFFECTIVE LENGTH	222	178	142	175	257	162	189	282	186	281	203	182	165	102	165	173	172	176	123	200	167
ADJUSTED PRESSURE	0.08	0.1	0.12	0.1	0.07	0.11	0.09	0.06	0.09	0.06	0.08	0.09	0.1	0.17	0.1	0.1	0.1	0.09	0.13	0.08	0.1
ROUND DUCT SIZE	5	4	6	5	6	4	5	6	5	4	6	5	5	5	5	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	220	207	204	228	163	92	228	163	220	218	444	338	338	338	140	455	310	413	413	413	413
COOLING VELOCITY (ft/min)	411	402	388	507	301	46	507	301	411	252	398	433	433	433	396	206	92	102	102	102	102
OUTLET GRILL SIZE	3X10	3X10	4X10	3X10	4X10	3X10	3X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	B	C	D	C	A	D	C	A	B	A	A	B	B	D	C	A	D	B	D	A	A

RUN #	ROOM NAME	RM LOSS MBH	CFM PER RUN HEAT	RM GAIN MBH	CFM PER RUN COOLING	ADJUSTED PRESSURE	ACTUAL DUCT LGH.	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	ROUND DUCT SIZE	HEATING VELOCITY (ft/min)	COOLING VELOCITY (ft/min)	OUTLET GRILL SIZE	TRUNK
1	MBR	1.68	30	1.81	56	0.17	52	170	222	0.08	5	220	411	3X10	B
2	ENS	1.05	18	1.12	35	0.17	38	140	178	0.1	4	207	402	3X10	C
4	BED-2	2.25	40	2.45	76	0.17	32	110	142	0.12	6	204	388	4X10	D
5	BED-3	1.77	31	2.21	69	0.17	45	130	175	0.1	5	228	507	3X10	C
6	BED-4	1.84	32	1.91	59	0.17	77	180	257	0.07	6	163	301	4X10	A
7	BATH	0.44	8	0.11	4	0.17	22	140	162	0.11	4	92	46	3X10	D
8	BED-3	1.77	31	2.21	69	0.17	49	140	189	0.09	5	228	507	3X10	C
9	BED-4	1.84	32	1.91	59	0.17	82	200	282	0.06	6	163	301	4X10	A
10	MBR	1.68	30	1.81	56	0.17	46	140	186	0.09	5	220	411	3X10	B
11	ENS-4	1.05	19	0.72	22	0.17	81	200	281	0.06	4	218	252	3X10	A
12	DIN	4.94	87	2.53	78	0.16	53	150	203	0.08	6	444	398	4X10	A
14	KT/FM	2.60	46	1.90	59	0.17	42	140	182	0.09	5	338	433	3X10	B
15	KT/FM	2.60	46	1.90	59	0.17	35	130	165	0.1	5	338	433	3X10	B
16	KT/FM	2.60	46	1.90	59	0.17	22	80	102	0.17	5	338	433	3X10	D
17	LAUN	1.07	19	1.73	54	0.17	45	120	165	0.1	5	140	396	3X10	C
19	FOY	3.52	62	0.89	28	0.17	53	120	173	0.1	5	455	206	3X10	A
20	MUD	1.56	27	0.25	8	0.17	12	160	172	0.1	4	310	92	3X10	D
21	BAS	4.59	81	0.63	20	0.16	36	140	176	0.09	6	413	102	4X10	B
22	BAS	4.59	81	0.63	20	0.16	13	110	123	0.13	6	413	102	4X10	D
23	BAS	4.59	81	0.63	20	0.16	40	160	200	0.08	6	413	102	4X10	A
24	BAS	4.59	81	0.63	20	0.16	57	110	167	0.1	6	413	102	4X10	A

SUPPLY AIR TRUNK SIZE											RETURN 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	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	394	0.06	10.6	14	X	8	507	TRUNK G	0	0.00	0	0	X	8	0	TRUNK O	0	0.05	0	0	X	8	0
TRUNK B	233	0.08	8.1	8	X	8	524	TRUNK H	0	0.00	0	0	X	8	0	TRUNK P	0	0.05	0	0	X	8	0
TRUNK C	726	0.06	13.4	20	X	8	653	TRUNK I	0	0.00	0	0	X	8	0	TRUNK Q	0	0.05	0	0	X	8	0
TRUNK D	928	0.06	14.7	26	X	8	642	TRUNK J	0	0.00	0	0	X	8	0	TRUNK R	0	0.05	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 S	0	0.05	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	TRUNK T	0	0.05	0	0	X	8	0

RETURN AIR #	1	2	3	4	5	6	7											BR	TRUNK V	0	0.05	0	0	x	8	0
AIR VOLUME	75	105	95	85	75	175	175	0	0	0	0	0	0	0	0	0	0	0.05	0	0	x	8	0			
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.05	15.3	28	x	8	597			
ACTUAL DUCT LGH	53	34	53	64	58	38	28	1	1	1	1	1	1	1	1	1	1	0.05	12.2	18	x	8	505			
EQUIVALENT LENGTH	230	135	145	185	225	160	175	0	0	0	0	0	0	0	0	0	0	0.05	8.2	8	x	8	394			
TOTAL EFFECTIVE LGH	283	169	198	249	283	198	203	1	1	1	1	1	1	1	1	1	1	0.05	15.3	24	x	10	557			
ADJUSTED PRESSURE	0.05	0.09	0.07	0.06	0.05	0.07	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.07								
ROUND DUCT SIZE	6	5.9	6	6	6	7.5	7.5	0	0	0	0	0	0	0	0	0	0									
INLET GRILL SIZE	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0									
INLET GRILL SIZE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X									
INLET GRILL SIZE	14	14	14	14	14	14	14	0	0	0	0	0	0	0	0	0	0									

TYPE: PINETREE 2
SITE NAME: ROUNDEL HOMES INC

LO # 90733

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	2 @ 21.2 cfm	42.4 cfm
Other Bedrooms	3 @ 10.6 cfm	31.8 cfm
Kitchen & Bathrooms	5 @ 10.6 cfm	53 cfm
Other Rooms	4 @ 10.6 cfm	42.4 cfm
Table 9.32.3.A.	TOTAL	169.6 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	169.6	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	90.1	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANE V150H	Location: BSMT
79.5 cfm	☒ HVI Approved

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

SUPPLEMENTAL FANS		BY INSTALLING CONTRACTOR	
Location	Model	cfm	HVI
ENS	BY INSTALLING CONTRACTOR	50	3.5
BATH	BY INSTALLING CONTRACTOR	50	3.5
ENS-4	BY INSTALLING CONTRACTOR	50	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANE V150H		
150 cfm high	35 cfm low	
75 % 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:	
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:	May-21

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

CITY OF RICHMOND HILL
BUILDING DIVISION
09/22/2022
RECEIVED
Per: joshua.nabua

CSA F280-12 Residential Heat Loss and Heat Gain Calculations
Formula Sheet (For Air Leakage / Ventilation Calculation)

LO#: 90733

Model: PINETREE 2

Builder: GREENPARK HOMES

Date: 2021-05-11

Volume Calculation
House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1182	9	10638
First	1182	11	13002
Second	1419	9	12771
Third	0	9	0
Fourth	0	9	0
Total:			36,411.0 ft³
Total:			1031.0 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.361
SUMMER NATURAL AIR CHANGE RATE	0.113

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

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

$$0.361 \times 286.40 \times 43^\circ\text{C} \times 1.2 = 5368 \text{ W}$$

$$= 18314 \text{ Btu/h}$$

6.2.6 Sensible Gain due to Air Leakage

$$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$$

$$0.113 \times 286.40 \times 7^\circ\text{C} \times 1.2 = 275 \text{ W}$$

$$= 940 \text{ Btu/h}$$

5.2.3.2 Heat Loss due to Mechanical Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

$$80 \text{ CFM} \times 78^\circ\text{F} \times 1.08 \times 0.25 = 1670 \text{ Btu/h}$$

6.2.7 Sensible heat Gain due to Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

$$80 \text{ CFM} \times 13^\circ\text{F} \times 1.08 \times 0.25 = 275 \text{ Btu/h}$$

5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)

$$HL_{airr} = \text{Level Factor} \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agcleve} + HL_{bgcleve})\}$$

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	18,314	9,219	0.993
2	0.3		12,336	0.445
3	0.2		12,373	0.296
4	0		0	0.000
5	0		0	0.000

*HLairbv = Air leakage heat loss + ventilation heat loss

*For a balanced or supply only ventilation system HLairve = 0

Per: joshua.nabua

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09/22/2022

CITY OF RICHMOND HILL
BUILDING DIVISION

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: PINETREE 2

BUILDER: GREENPARK HOMES

SFQT: 2601

LO# 90733

SITE: ROUNDEL HOMES INC

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

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):	36411.0	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:	6.0 ft
LENGTH: 54.0 ft	WIDTH: 33.0 ft	EXPOSED PERIMETER:	174.0 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 Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



CITY OF RICHMOND HILL
BUILDING DIVISION

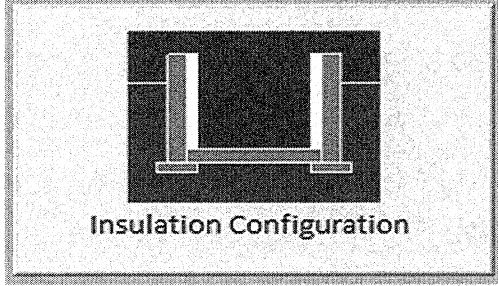
09/22/2022

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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):	16.5	 Insulation Configuration
Floor Width (m):	10.1	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	2.0	
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):		1722

TYPE: PINETREE 2
LO# 90733CITY OF RICHMOND HILL
BUILDING DIVISION

09/22/2022

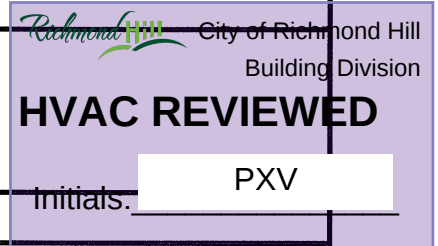
RECEIVED

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):	7.92		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	1031.0		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.		1374.4 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):	0.361		
Cooling Air Leakage Rate (ACH/H):	0.113		

TYPE: PINETREE 2
LO# 90733CITY OF RICHMOND HILL
BUILDING DIVISION

09/22/2022

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Per: joshua.nabua



City of Richmond Hill
Building Division

REVIEWED

By: **PV** Date: **Oct/04/2022**

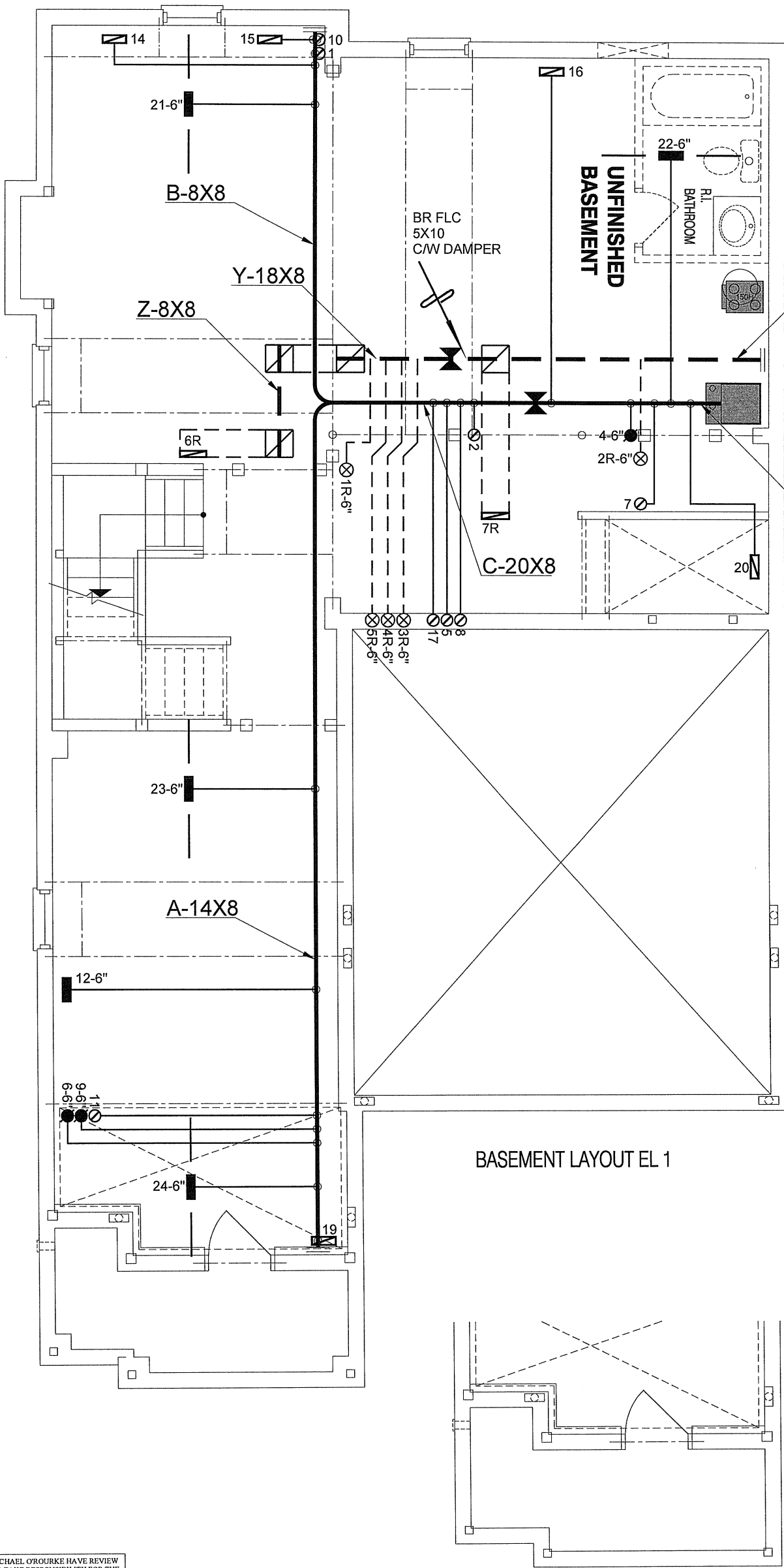
Building Permit #: **RM#-22-00081**

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.

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)



I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.3 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

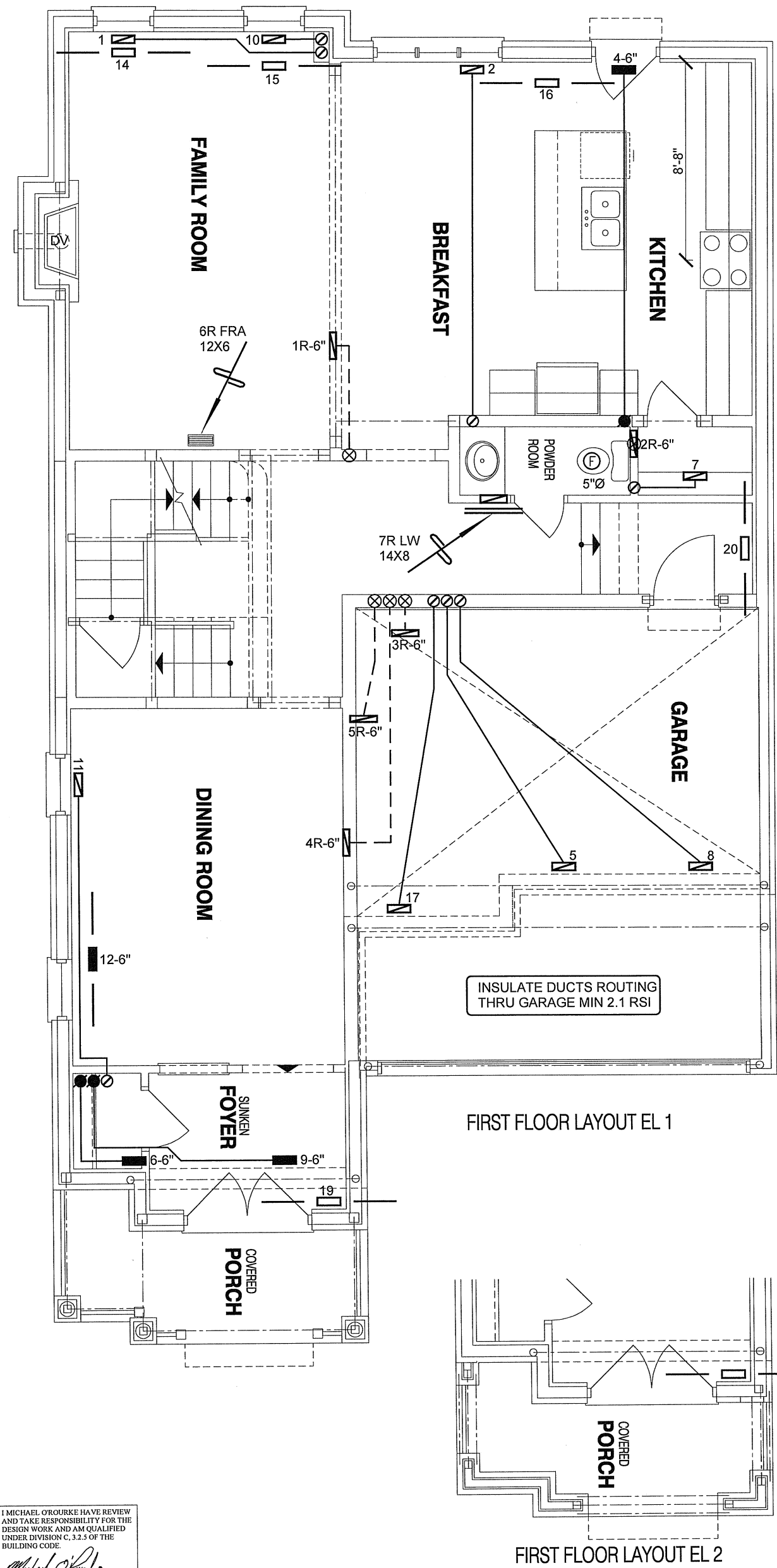
CSA-F280-12

PACKAGE A1

HVAC LEGEND						3.	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE	1.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	No.	Description Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	REVISIONS	
	REDUCER						

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND 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.

Client		HVAC DESIGNS LTD. 375 Finley Ave. Suite 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	HEAT LOSS 54332 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title	
GREENPARK HOMES			MAKE GOODMAN	3RD FLOOR					BASEMENT HEATING LAYOUT CITY OF RICHMOND HILL BUILDING DIVISION
Project Name ROUNDEL HOMES INC RICHMOND HILL, ONTARIO		MODEL GMEC960603BNA	2ND FLOOR		11	5	3	Date MAY/2021	
		INPUT 60 MBTU/H	1ST FLOOR		6	2	2	Scale 3/16" = 1'-0"	
		OUTPUT 57.6 MBTU/H	BASEMENT		4	1	0	09/22/2022	
		COOLING 2.5 TONS			ALL S/A DIFFUSERS 4" x 10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A			BCIN# 19669	
PINETREE 2 2601 sqft		FAN SPEED 928 cfm @ 0.6" w.c.						LO# 90733	RECEIVED



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).

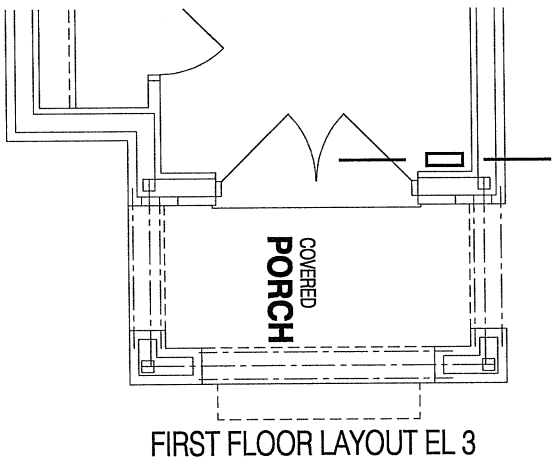
10. Supply air grill at finished basement shall be at low level. Return air grill for finished or unfinished basement shall be at low level. HRAI digest 2005, clause 7.7(3).

Richmond Hill
City of Richmond Hill
Building Division

HVAC REVIEWED

Initials:

PXV



CSA-F280-12

PACKAGE A1

I MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

HVAC LEGEND						3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	2.
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	1.
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	No. Description Date
REVISIONS								

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Client

GREENPARK HOMES

Project Name

ROUNDEL HOMES INC
RICHMOND HILL, ONTARIO

PINETREE 2 2601 sqft

HVACDESIGNS LTD.

375 Finley Ave. Suite 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

Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title

FIRST FLOOR
HEATING
LAYOUT

CITY OF RICHMOND HILL
BUILDING DIVISION

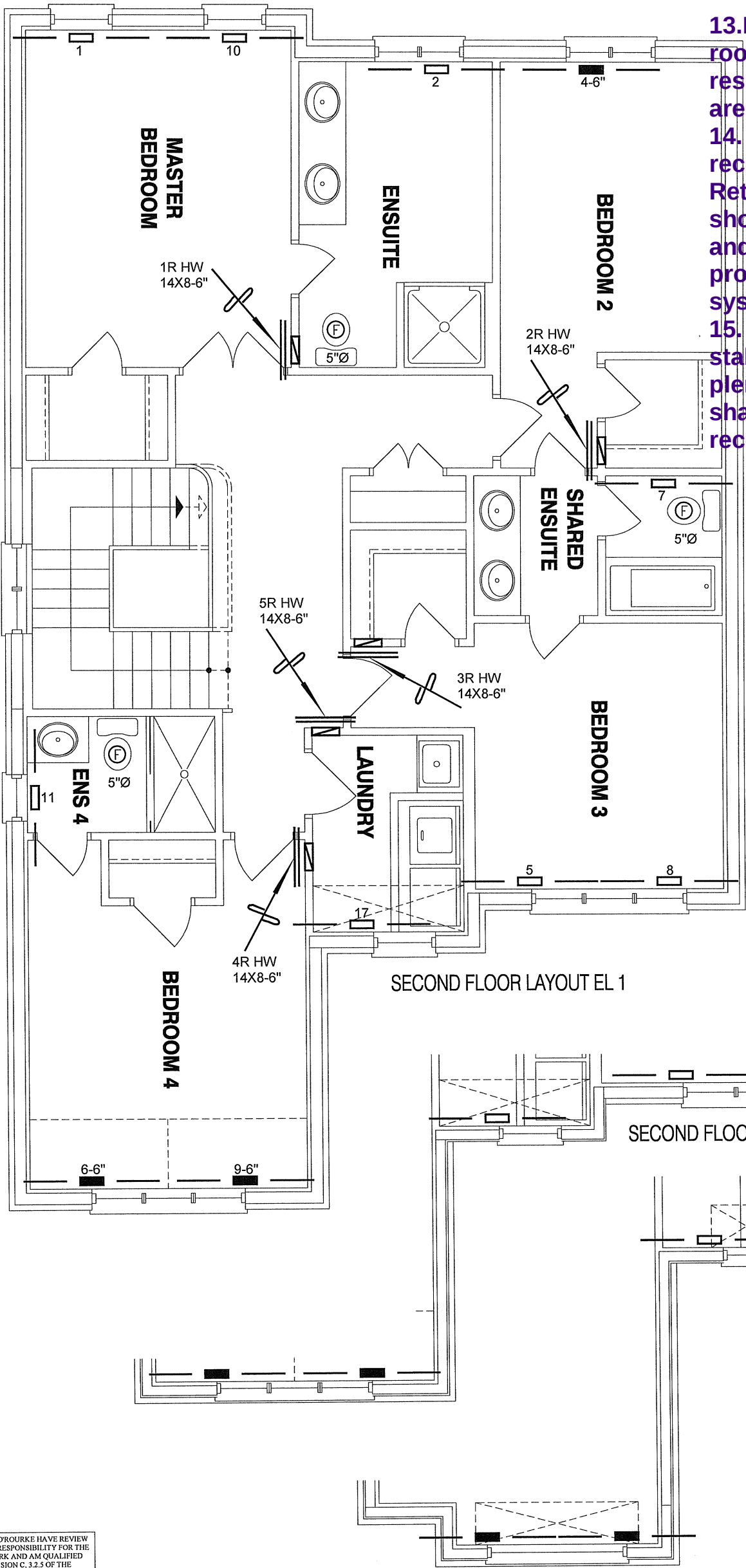
Date
MAY/2021

Scale
3/16" = 1'-0"

BCIN# 19669

LO# 90733

Per: joshua.nabua



SECOND FLOOR LAYOUT EL 1

SECOND FLOOR LAYOUT EL 2

SECOND FLOOR LAYOUT EL 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.

Richmond Hill

City of Richmond Hill

Building Division

HVAC REVIEWED

Initials: PXV

I MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12

PACKAGE A1

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
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	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

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Client

GREENPARK HOMES

Project Name

ROUNDEL HOMES INC
RICHMOND HILL, ONTARIO

PINETREE 2

2601 sqft

HVACDESIGNS LTD.

375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title

SECOND FLOOR HEATING LAYOUT

CITY OF RICHMOND HILL BUILDING DIVISION

Date MAY/2021

Scale 3/16" = 1' 0"

BCIN# 19669

LO# 90733

Per: joshua.nabua