

45-04 Duncan

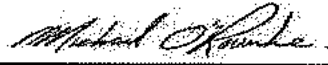
CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

RECEIVED

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project. Per: _____

A. Project Information			
Building number, street name		Unit no.	Lot/con.
Municipality	Postal code	Plan number/ other description	
RICHMOND HILL			
B. Individual who reviews and takes responsibility for design activities			
Name		Firm	
MICHAEL O'ROURKE		HVAC DESIGNS LTD.	
Street address		Unit no.	Lot/con.
375 FINLEY AVE		202	N/A
Municipality	Postal code	Province	E-mail
AJAX	L1S 2E2	ONTARIO	info@hvacdesigns.ca
Telephone number	Fax number	Cell number	
(905) 619-2300	(905) 619-2375	()	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]			
<input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings			
<input checked="" type="checkbox"/> HVAC – House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection			
<input type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> On-site Sewage Systems			
Description of designer's work		Model: 4504 Duncan	
HEAT LOSS / GAIN CALCULATIONS		Project: CENTREFIELD (WEST GORMLEY)	
DUCT SIZING			
RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY			
RESIDENTIAL SYSTEM DESIGN per CSA-F280-12			
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u>		declare that (choose one as appropriate):	
(print name)			
<input type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4 of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.			
Individual BCIN: _____ Firm BCIN: _____			
<input checked="" type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code.			
Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C. SENTENCE 3.2.4.1 (4)</u>			
<input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code.			
Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.			
June 7, 2021			
Date		Signature of Designer	

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Application for a Permit Construct or Demolish – Effective January 1, 2015

08/12/2021

Per:

TOTAL COMBINED HEAT LOSS BTU/H: 51107

STRUCTURAL HEAT LOSS: 49437

LOSS DUE TO VENTILATION LOAD BTU/H: 4670

TONS: 3.44

TOTAL HEAT GAIN BTU/H:

OF 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.

NOVEMBER 2015

MICHAEL D. BORDO

SITE NAME: CENTREFIELD (WEST GORMLEY)
BUILDER: ROYAL PINE HOMES

TYPE: 4504

DATE: Jun-21

GFA: 3223 LCH: 87511

HEATING CFM 1370 COOLING CFM 1370
TOTAL HEAT LOSS 49,437 TOTAL HEAT GAIN 40,985
AIR FLOW RATE CFM 27.71 AIR FLOW RATE CFM 33.43furnace pressure 0.6
furnace filter 0.05
alc coil pressure 0.2
available pressure 0.35
plenum pressure s/a 0.18
max s/a diff press. loss 0.02
min adjusted pressure s/a 0.16**CARRIER
59TNGA-060-14V
FAN SPEED 60AFUE = 97 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 58,000

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	12	10	5
R/A	0	0	5	3	1

All S/A diffusers 4"X10" unless noted otherwise on layout.

All S/A turns 5° unless noted otherwise on layout.

ROOM NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
BAS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
RM LOSS MBH	1.65	0.92	0.92	2.26	1.89	1.54	0.58	2.26	1.89	1.85	0.75	1.13	1.13	2.04	2.04	2.04	0.31	0.53	2.42	1.87	3.17	3.17	3.17	3.17
CFM PER RUN HEAT	46	25	25	63	52	43	16	63	52	48	21	31	31	67	57	57	9	15	67	52	88	88	88	88
RM GAIN MBH	2.08	0.79	0.79	3.03	2.67	2.08	0.36	3.03	2.67	2.08	0.33	1.65	1.65	2.55	2.55	2.55	1.05	0.35	1.91	0.32	0.45	0.45	0.45	0.45
CFM PER RUN COOLING	70	26	26	101	89	70	12	101	89	70	11	55	55	85	85	85	35	12	60	11	15	15	15	15
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16
EQUIVALENT LENGTH	150	180	180	120	170	170	170	140	150	180	170	170	170	120	140	140	130	120	160	190	120	120	120	110
TOTAL EFFECTIVE LENGTH	195	222	240	174	241	236	226	202	216	194	226	231	225	154	166	166	175	169	209	231	120	136	137	148
ADJUSTED PRESSURE	0.09	0.08	0.07	0.09	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.07	0.08	0.11	0.11	0.11	0.1	0.1	0.08	0.07	0.14	0.12	0.12	0.11
ROUND DUCT SIZE	5	4	4	6	6	6	4	6	6	6	4	5	5	6	6	6	4	4	5	5	6	6	6	6
HEATING VELOCITY (ft/min)	338	287	287	321	265	219	184	321	265	338	241	228	228	291	291	291	103	172	492	382	449	449	449	449
COOLING VELOCITY (ft/min)	514	298	298	515	454	357	138	515	454	514	126	404	404	433	433	433	402	138	441	81	76	76	76	76
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	D	D	C	A	B	B	C	A	E	C	A	A	E	D	D	C	B	A	C	E	E	C	B

CITY OF RICHMOND HILL
BUILDING DIVISION
08/12/2021RECEIVED
Per: _____

SUPPLY AIR TRUNK SIZE											RETURN AIR TRUNK SIZE										
TRUNK	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)							
TRUNK A	0.07	9.5	12	8	321	0.07	9.5	12	8	TRUNK G	0	0.00	0	0							
TRUNK B	0.07	11.5	16	8	538	0.07	11.5	16	8	TRUNK H	0	0.00	0	0							
TRUNK C	0.07	13.5	20	10	834	0.07	13.5	20	10	TRUNK I	0	0.00	0	0							
TRUNK D	0.07	8.1	10	8	210	0.07	8.1	10	8	TRUNK J	0	0.00	0	0							
TRUNK E	0.07	11.5	16	8	538	0.07	11.5	16	8	TRUNK K	0	0.00	0	0							
TRUNK F	0.00	0	0	0	0	0.00	0	0	0	TRUNK L	0	0.00	0	0							
RETURN AIR #											BR										
AIR VOLUME	1	2	3	4	5	6	7	8	9	10	11	12	13	14							
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							
ACTUAL DUCT LGH.	85	55	88	78	50	37	15	1	1	1	1	1	1	1							
EQUIVALENT LENGTH	195	245	215	235	205	190	245	145	0	0	0	0	0	0							
TOTAL EFFECTIVE LGH	280	300	303	313	255	247	282	160	1	1	1	1	1	1							
ADJUSTED PRESSURE	0.05	0.05	0.05	0.05	0.06	0.06	0.05	0.09	14.80	14.80	14.80	14.80	14.80	14.80							
ROUND DUCT SIZE	7	7	7	7	7	7	10.1	6.5	0	0	0	0	0	0							
INLET GRILL SIZE	8	8	8	8	8	8	8	8	0	0	0	0	0	0							
INLET GRILL SIZE	14	14	14	14	14	14	30	14	0	0	0	0	0	0							

08/12/2021

TYPE: 4504
SITE NAME: CENTREFIELD (WEST GORMLEY)

LO # 67511

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	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.	TOTAL			190.8 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	190.8	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	111.3	cfm

PRINCIPAL EXHAUST FAN CAPACITY
Model: VANE 65H Location: BSMT
79.5 cfm ☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM	ΔT °F	FACTOR	% LOSS
79.5 CFM	X 78 F	X 1.08	X 0.25

SUPPLEMENTAL FANS BY INSTALLING CONTRACTOR

Location	Model	cfm	HVI	Notes
ENS	BY INSTALLING CONTRACTOR	50	✓	3.5
BATH	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-2	BY INSTALLING CONTRACTOR	50	✓	3.5
W/R	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.
Model: VANE 65H
155 cfm high 64 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: ROYAL PINE 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: *Michael O'Rourke*
HRAI # 001820
Date: June-21

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																							
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																							
LO#: 87511	Model: 4504	Date: 6/7/2021																																																					
Volume Calculation		Air Change & Delta T Data																																																					
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> <tr> <td>Basement</td> <td>1453</td> <td>9</td> <td>13077</td> </tr> <tr> <td>First</td> <td>1453</td> <td>10</td> <td>14530</td> </tr> <tr> <td>Second</td> <td>1770</td> <td>8</td> <td>14160</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="2" style="text-align: right;">Total:</td> <td></td> <td>41,767.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>1182.7 m³</td> </tr> </table>		Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Basement	1453	9	13077	First	1453	10	14530	Second	1770	8	14160	Third	0	9	0	Fourth	0	9	0	Total:			41,767.0 ft³	Total:			1182.7 m³	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="4">Design Temperature Difference</th> </tr> <tr> <th>T_{in} °C</th> <th>T_{out} °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DT_{Dh}</td> <td>22</td> <td>-21</td> <td>43</td> </tr> <tr> <td>Summer DT_{Dc}</td> <td>24</td> <td>31</td> <td>7</td> </tr> <tr> <td></td> <td></td> <td></td> <td>13</td> </tr> </table>		Design Temperature Difference				T _{in} °C	T _{out} °C	ΔT °C	ΔT °F	Winter DT _{Dh}	22	-21	43	Summer DT _{Dc}	24	31	7				13
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6.2.6 Sensible Gain due to Air Leakage																																																							
$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$																																																							
0.219	x	328.53	x																																																				
		7 °C	x																																																				
		1.2	=																																																				
			191 W																																																				
			=																																																				
			652 Btu/h																																																				
6.2.7 Sensible heat Gain due to Ventilation																																																							
$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																							
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)																																																							
$HL_{airr} = Level Factor \times HL_{airbv} \times ((HL_{ager} + HL_{bgr}) + (HL_{aglevel} + HL_{bglevel}))$																																																							
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5	0		0	0.000																																																			
<p>*HL_{airbv} = Air leakage heat loss + ventilation heat loss</p> <p>*For a balanced or supply only ventilation system HL_{airve} = 0</p>																																																							

CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

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Per: _____

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4504

SFQT: 3223

LO#

87511

BUILDER: ROYAL PINE HOMES

SITE: CENTREFIELD (WEST GORMLEY)

DESIGN ASSUMPTIONS

HEATING

OUTDOOR DESIGN TEMP.

INDOOR DESIGN TEMP.

°Per:

-6

72

COOLING

OUTDOOR DESIGN TEMP.

INDOOR DESIGN TEMP. (MAX 75°F)

°F

88

75

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	41767.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.40	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 57.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	188.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component**

Ceiling with Attic Space Minimum RSI (R)-Value
Ceiling Without Attic Space Minimum RSI (R)-Value
Exposed Floor Minimum RSI (R)-Value
Walls Above Grade Minimum RSI (R)-Value
Basement Walls Minimum RSI (R)-Value
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
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value
Windows and Sliding Glass Doors Maximum U-Value
Skylights Maximum U-Value
Space Heating Equipment Minimum AFUE
HRV Minimum Efficiency
Domestic Hot Water Heater Minimum EF

**CITY OF RICHMOND HILL
BUILDING DIVISION****08/12/2021****RECEIVED**

Per: _____

**Compliance Package
SB-12 PERFORMANCE**

Nominal	Min. Eff.
60	59.20
31	27.70
31	29.80
22+1.5	18.50
20	21.12
-	-
10	10
10	11.13
1.6	-
2.6	-
0.96	-
75%	-
TE=94%	-

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

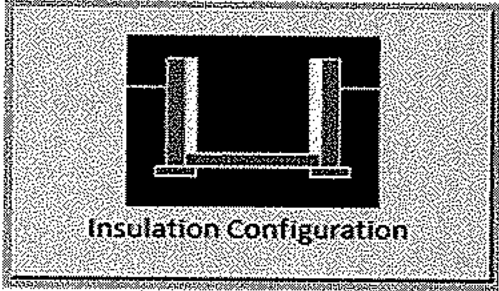
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Per: _____

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):	17.4	 Insulation Configuration
Floor Width (m):	11.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.9	
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):	1897	

TYPE: 4504
LO# 87511

08/12/2021

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Per: _____

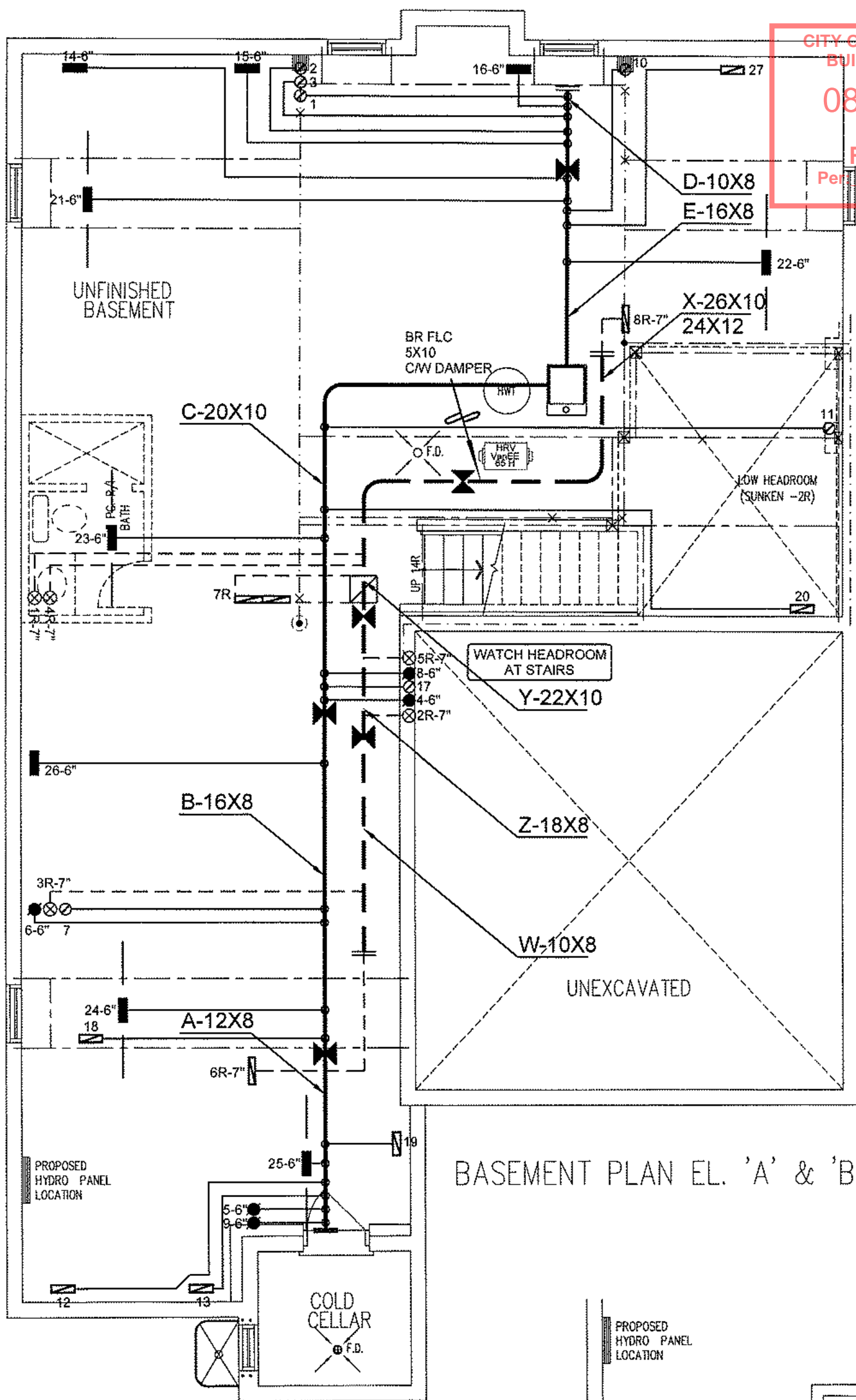
Air Infiltration Residential Load Calculator

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):	6.40		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	1182.7		
Air Leakage/Ventilation			
Air Tightness Type:	Energy Star Detached (2.5 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1104.1 cm ²	
	2.50	ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust	
	37.5	37.5	
Flue Size			
Flue #:	#1	#2	#3
Diameter (mm):	0	0	0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.219		
Cooling Air Leakage Rate (ACH/H):	0.068		

TYPE: 4504

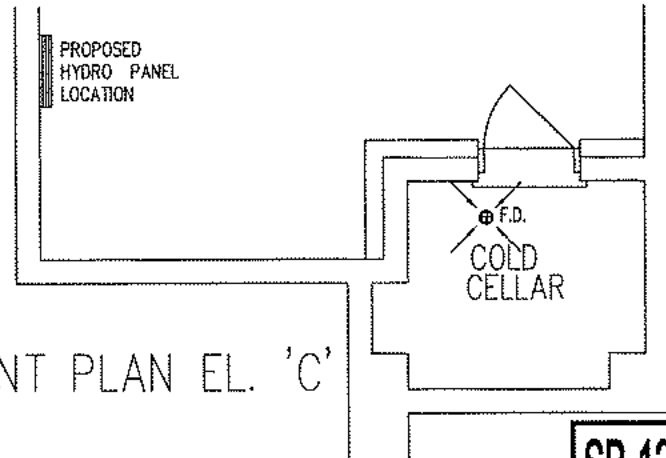
LO# 87511



CITY OF RICHMOND HILL
BUILDING DIVISION
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BASEMENT PLAN EL. 'A' & 'B'

BASEMENT PLAN EL. 'C'



I MICHAEL OROURKE 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, BCIN# 19669
HVAC DESIGNS LTD.

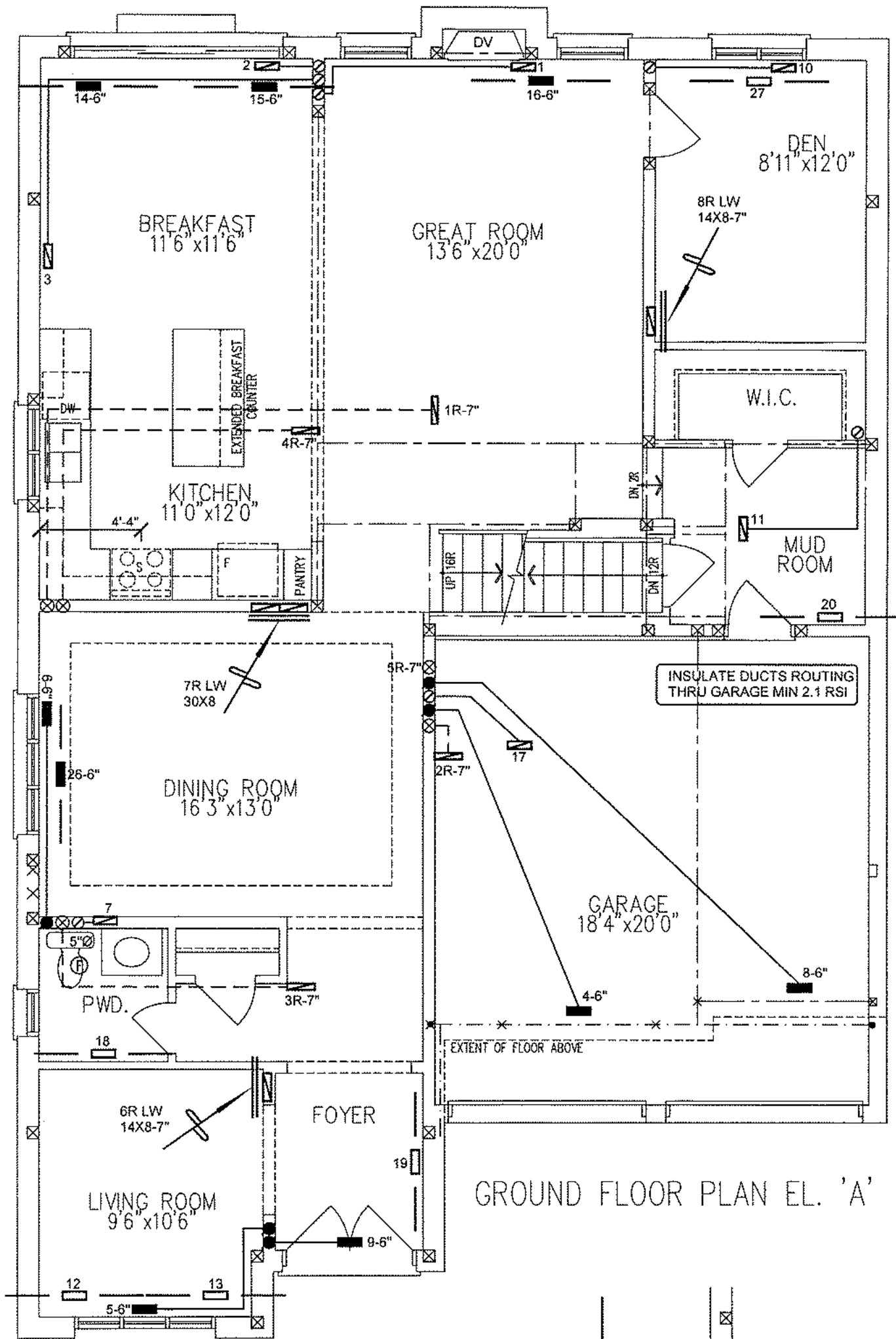
CSA-F280-12

SB-12 PERFORMANCE

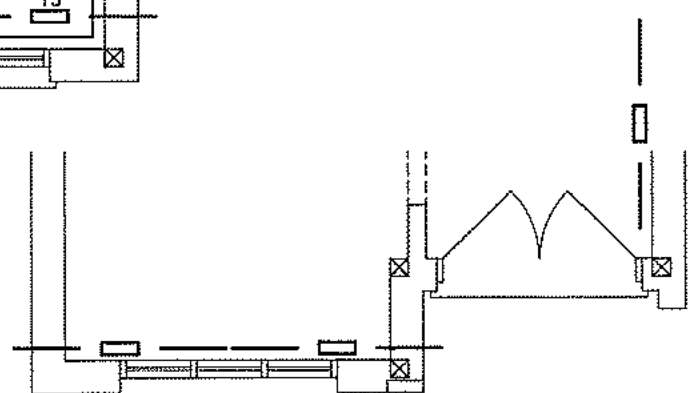
HVAC LEGEND						3.	REVISED AS PER CAD	JUNE/2021
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		8" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	REVISIONS		

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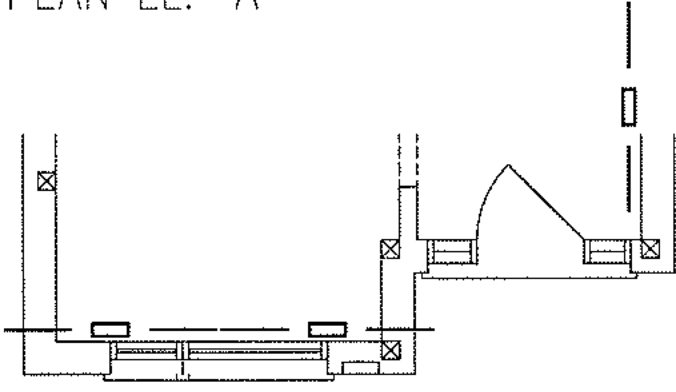
Client		<div>HVAC DESIGNS LTD.</div> <div>375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services</div>	HEAT LOSS 51107 BTU/H		# OF RUNS S/A R/A FANS			Sheet Title BASEMENT HEATING LAYOUT	
ROYAL PINE HOMES			UNIT DATA		3RD FLOOR				
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			MAKE CARRIER		2ND FLOOR 12 5 5				
			MODEL 59TN6A-060-14V		1ST FLOOR 10 3 2				
			INPUT 60 MBTU/H		BASEMENT 5 1 0				
4504		OUTPUT 58 MBTU/H		ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A			Date SEPT/2020		
3223 sqft		COOLING 3.5 TONS					Scale 3/16" = 1'-0"		
		FAN SPEED 1370 cfm @ 0.6" w.c.					BCIN# 19669		
							LO# 87511		



GROUND FLOOR PLAN EL. 'A'



GROUND FLOOR PLAN EL. 'B'



GROUND FLOOR PLAN EL. 'C'

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

SB-12 PERFORMANCE

HVAC LEGEND						3.	REVISED AS PER CAD	JUNE/2021
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. REVISED AS PER ARCHITECTURALS
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	1. REVISED TO PERFORMANCE
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	SEPT/2020
REVISIONS								
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Client
ROYAL PINE HOMES

Project Name
**CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO**

4504 3223 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@hvacdsgns.ca
Web: www.hvacdsgns.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.

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BUILDING DIVISION
08/12/2021
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Per: _____

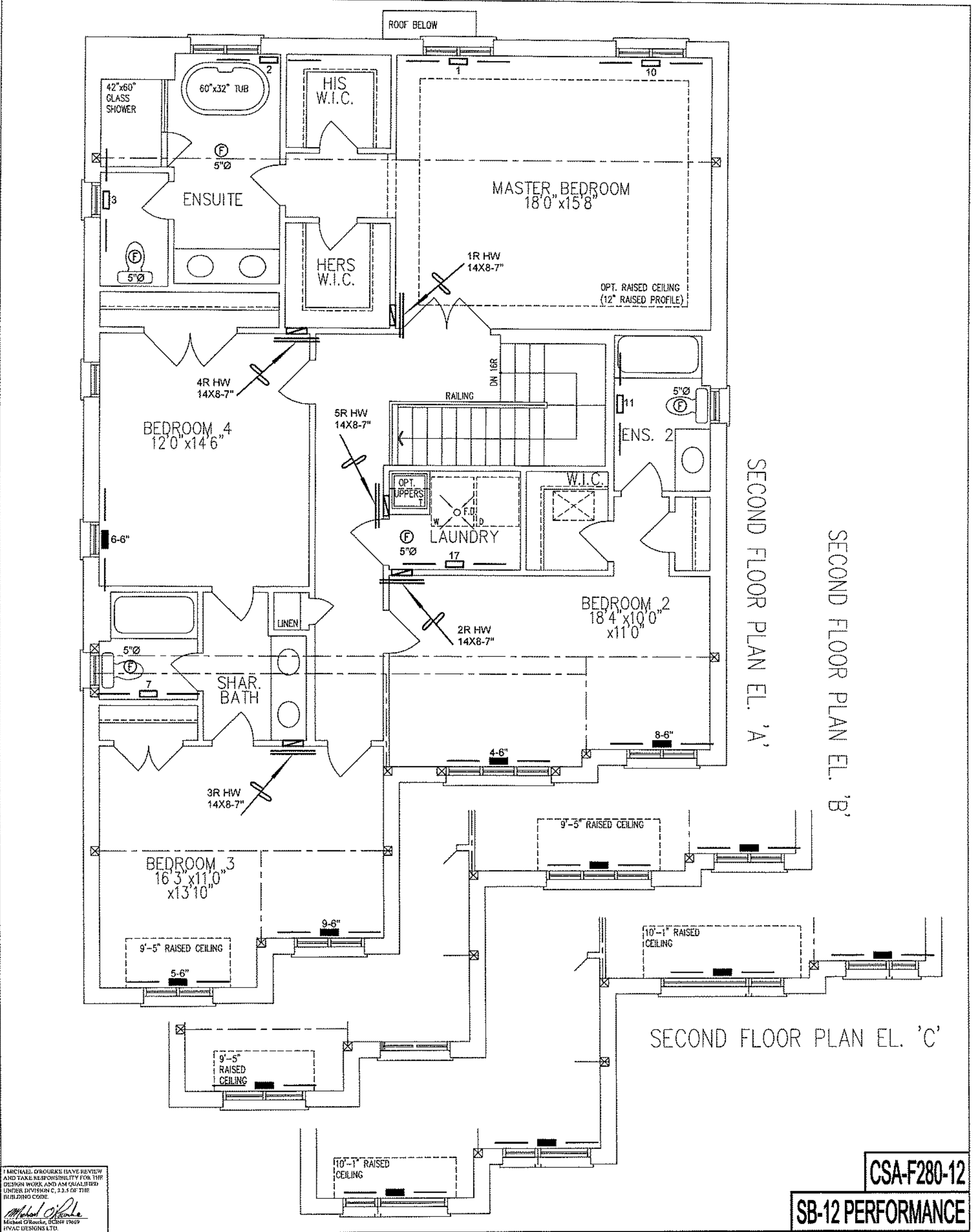
Sheet Title
**FIRST FLOOR
HEATING
LAYOUT**

Date
SEPT/2020

Scale
3/16" = 1'-0"

BCIN# 19669

LO# 87511















I MICHAEL O'Rourke HAVE REVIEWED 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, BCRA 17669
HVAC DESIGNS LTD.

CSA-F280-12

SB-12 PERFORMANCE

HVAC LEGEND								3.	REVISED AS PER CAD	JUNE/2021
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

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Client ROYAL PINE HOMES		<div><p>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</p><p>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.</p></div>	<div><div>CITY OF RICHMOND HILL BUILDING DIVISION</div><div>08/12/2021</div><div>RECEIVED</div><div>Per: _____</div></div>		Sheet Title SECOND FLOOR HEATING LAYOUT	
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO					Date SEPT/2020	
4504 3223 sqft					Scale 3/16" = 1'-0"	
					BCIN# 19669	
				LO#	87511	

08/12/2021

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Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project. Per: _____

A. Project Information			
Building number, street name		Unit no.	Lot/con.
Municipality RICHMOND HILL	Postal code	Plan number/ other description	
B. Individual who reviews and takes responsibility for design activities			
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.	
Street address 375 FINLEY AVE		Unit no. 202	Lot/con. N/A
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdesigns.ca
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()	
C. Design activities undertaken by individual identified in Section B. (Building Code Table 3.5.2.1 OF Division C)			
<input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings <input checked="" type="checkbox"/> HVAC – House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection <input type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> On-site Sewage Systems			
Description of designer's work HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12		Model: 4504 OPT. 2ND Project: CENTREFIELD (WEST GORMLEY)	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u> (print name)		declare that (choose one as appropriate):	
<input type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____			
<input checked="" type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C. SENTENCE 3.2.4.1 (4)</u>			
<input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.			
June 7, 2021 Date		 Signature of Designer	

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

SITE NAME: CENTREFIELD (WEST GORMLEY)										OPT. 2ND		DATE: Jun-21		WINTER NATURAL AIR CHANGE RATE 0.219		HEAT LOSS AT °F. 78		CSA-280-12															
BUILDER: ROYAL PINE HOMES										TYPE: 4504		LOW 87614		SUMMER NATURAL AIR CHANGE RATE 0.048		HEAT GAIN AT °F. 13		SB-42 PERFORMANCE															
ROOM USE										ENR		GFA: 3223		BED-4		ENS-4/5		BED-5		ENS-2/3													
EXP. WALL										32		WIC		BED-2		BED-3		BED-4		BED-5		ENS-2/3											
CLG. HT.										3		5		37		13		46		12		23											
FACTORS										8		8		8		8		8		8		8											
ORS.WALL AREA										50		40		295		104		380		95		184											
GLAZING										LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN											
NORTH										0	0	0	0	0	0	0	0	0	0	0	0	7	182	112									
EAST										0	0	0	0	0	0	0	0	0	0	0	0	20	435	831									
SOUTH										0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
WEST										0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
SKYL.T.										0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
DOORS										0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
NET EXPOSED WALL										4.2	0.7	252	1050	174	85	273	45	40	168	28	270	1135	197	57	240	39	172	23	30	336	55		
NET EXPOSED BENT WALL ABOVE GR										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	289	340	170	124	163	73	88	40	332	436	195	187	286	92	215	283	125	49	242	279	128	
NO ATTIC EXPOSED CLG										2.8	1.3	0	0	0	0	0	0	0	0	0	30	84	38	40	112	50	0	0	0	0	0	0	0
EXPOSED FLOOR										2.6	0.4	0	0	0	0	0	0	0	0	0	187	488	80	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS										0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
SLAB ON GRADE HEAT LOSS										0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
SUBTOTAL HT LOSS										2224	1840	763	256	2138	1462	2042	3034	424	251	578	1688	1185											
SUB TOTAL HT GAIN										0.20	0.18	0.20	0.18	0.20	0.18	0.20	0.18	0.20	0.18	0.20	0.18	0.20	0.18	0.20	0.18	0.20	0.18	0.20	0.18	0.20	0.18		
LEVEL FACTOR / MULTIPLIER										410	79	0	0	335	63	85	131	80	11	25	312	50	122	0	0	0	0	0	0	0	0	0	
AIR CHANGE HEAT LOSS										0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
DUCT LOSS										0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
DUCT GAIN										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 PEOPLE										2	480	0	0	1	240	240	640	540	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS										540	540	0	0	640	640	640	640	640	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL HT LOSS BTU/H										2834	3821	904	305	2633	2997	4401	5137	514	341	1738	2189	1738											
TOTAL HT GAIN x 1.3 BTU/H										3821	2597	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401		

ROOM USE										K7/GT		DIN		LAUN		WIR		FDY		NUD		BAS											
EXP. WALL										25	10	25	10	23	10	23	10	23	10	23	10	23	10	23	10	23	10	23	10	23	10	23	
CLG. HT.										10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
FACTORS										630	630	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230
GRS.WALL AREA										250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	
GLAZING										LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN		
NORTH										0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
EAST										0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SOUTH										0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
WEST										0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SKYL.T.										0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
DOORS										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										4.2	0.7	210	883	145	222	934	164	511	2149	354	207	871	143	0	0	0	0	0	0	0	0	0	0
NET EXPOSED BENT WALL ABOVE GR										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										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	
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	
EXPOSED FLOOR										2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BASEMENT/CRAWL HEAT LOSS										0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
SLAB ON GRADE HEAT LOSS										0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SUBTOTAL HT LOSS										1754	1807	1644	851	1099	632	4741	1372	1099	1334	1451	8378	582											
SUB TOTAL HT GAIN										0.30	0.29	0.30	0.29	0.30	0.29	0.30	0.29	0.30	0.29	0.30	0.29	0.30	0.29										
LEVEL FACTOR / MULTIPLIER										599	599	448	37	398	44	119	57	544	421	10	0	0	0	0	0	0	0	0	0	0	0		
AIR CHANGE HEAT LOSS										0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
DUCT LOSS										0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
DUCT GAIN										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 PEOPLE										240	240	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540
HEAT GAIN APPLIANCES/LIGHTS										540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	
TOTAL HT LOSS BTU/H										2264	3153	1992	1855	2192	7526	6117	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	540	
TOTAL HT GAIN x 1.3 BTU/H										3153	2597	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	

CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

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Per: _____

4	87	64	996	LOSS GAIN
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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08/12/2021

TYPE: 4504
SITE NAME: CENTREFIELD (WEST GORMLEY)LO # 87514
OPT. 2ND

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	4	@ 10.6 cfm	42.4	cfm
Kitchen & Bathrooms	5	@ 10.6 cfm	53	cfm
Other Rooms	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.		TOTAL	201.4	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	79.6	cfm
5	Bedroom	95.4	cfm
	TOTAL	201.4	cfm

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	201.4	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	106.0	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 65H Location: BSMT

95.4 cfm ☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM	ΔT °F	FACTOR	% LOSS
95.4 CFM	78 F	1.06	0.25

SUPPLEMENTAL FANS BY INSTALLING CONTRACTOR

Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	3.5
ENS-4/5	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	3.5
ENS-2/3	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	3.5
W/R	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE 65H

155 cfm high 64 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: ROYAL PINE 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: 

HRAI # 001820

Date: June-21

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																			
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																			
LO#: 87514	Model: 4504	Builder: ROYAL PINE HOMES	Date: 6/7/2021																																																
Volume Calculation		Air Change & Delta T Data																																																	
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> <tr> <td>Bsmt</td> <td>1453</td> <td>9</td> <td>13077</td> </tr> <tr> <td>First</td> <td>1453</td> <td>10</td> <td>14530</td> </tr> <tr> <td>Second</td> <td>1770</td> <td>8</td> <td>14160</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>Total:</td> <td></td> <td></td> <td>41,767.0 ft³</td> </tr> <tr> <td>Total:</td> <td></td> <td></td> <td>1182.7 m³</td> </tr> </table>		Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1453	9	13077	First	1453	10	14530	Second	1770	8	14160	Third	0	9	0	Fourth	0	9	0	Total:			41,767.0 ft³	Total:			1182.7 m³	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="4">WINTER NATURAL AIR CHANGE RATE</th> </tr> <tr> <td></td> <td></td> <td></td> <td>0.219</td> </tr> <tr> <th colspan="4">SUMMER NATURAL AIR CHANGE RATE</th> </tr> <tr> <td></td> <td></td> <td></td> <td>0.068</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE							0.219	SUMMER NATURAL AIR CHANGE RATE							0.068
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6.2.6 Sensible Gain due to Air Leakage																																																			
$HG_{satb} = LR_{airb} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$																																																			
0.219	x	328.53	x																																																
		7 °C	x																																																
		1.2	=																																																
			191 W																																																
			652 Btu/h																																																
6.2.7 Sensible heat Gain due to Ventilation																																																			
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																			
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)																																																			
$HL_{airr} = Level Factor \times HL_{airbv} \times ((HL_{qgr} + HL_{bgr}) + (HL_{qclvl} + HL_{bclvl}))$																																																			
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HL_{airbv} = Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{qgr})</th> <th>Air Leakage Heat Loss Multiplier (LF x HL_{airbv} / HL_{level})</th> </tr> <tr> <td>1</td> <td>0.5</td> <td rowspan="4">12,718</td> <td>8,378</td> <td>0.759</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>13,147</td> <td>0.290</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>13,783</td> <td>0.185</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</td> <td>0.000</td> </tr> </table>				Level	Level Factor (LF)	HL _{airbv} = Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{qgr})	Air Leakage Heat Loss Multiplier (LF x HL _{airbv} / HL _{level})	1	0.5	12,718	8,378	0.759	2	0.3	13,147	0.290	3	0.2	13,783	0.185	4	0	0	0.000	5	0	0	0	0.000																					
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3	0.2		13,783	0.185																																															
4	0		0	0.000																																															
5	0	0	0	0.000																																															
<p>*HL_{airbv} = Air leakage heat loss + ventilation heat loss</p> <p>*For a balanced or supply only ventilation system HL_{airve} = 0</p>																																																			

CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4504	OPT. 2ND	BUILDER: ROYAL PINE HOMES
SPQT: 3223	LO# 87514	SITE: CENTREFIELD (WEST GORMLEY)

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:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	41767.0	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: 46.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	166.0 ft

2012 OBC - COMPLIANCE PACKAGE

Component	Compliance Package SB-12 PERFORMANCE	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
Basement Walls Minimum RSI (R)-Value	20	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	1.6	-
Skylights Maximum U-Value	2.6	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

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BUILDING DIVISION****08/12/2021****RECEIVED**

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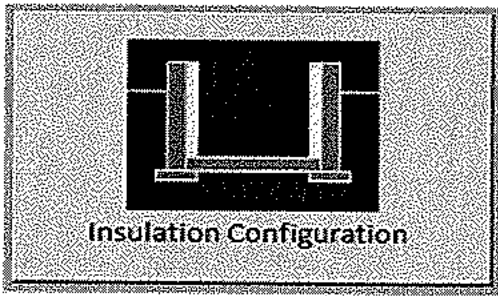
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

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):	14.0	
Floor Width (m):	11.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.9	
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):	1638	

TYPE: 4504
LO# 87514

OPT. 2ND

CITY OF RICHMOND HILL
BUILDING DIVISION

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08/12/2021

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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):	6.40			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1182.7			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1104.1 cm ²		
	2.50	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):	0.219			
Cooling Air Leakage Rate (ACH/H):	0.068			

TYPE: 4504

LO# 87514

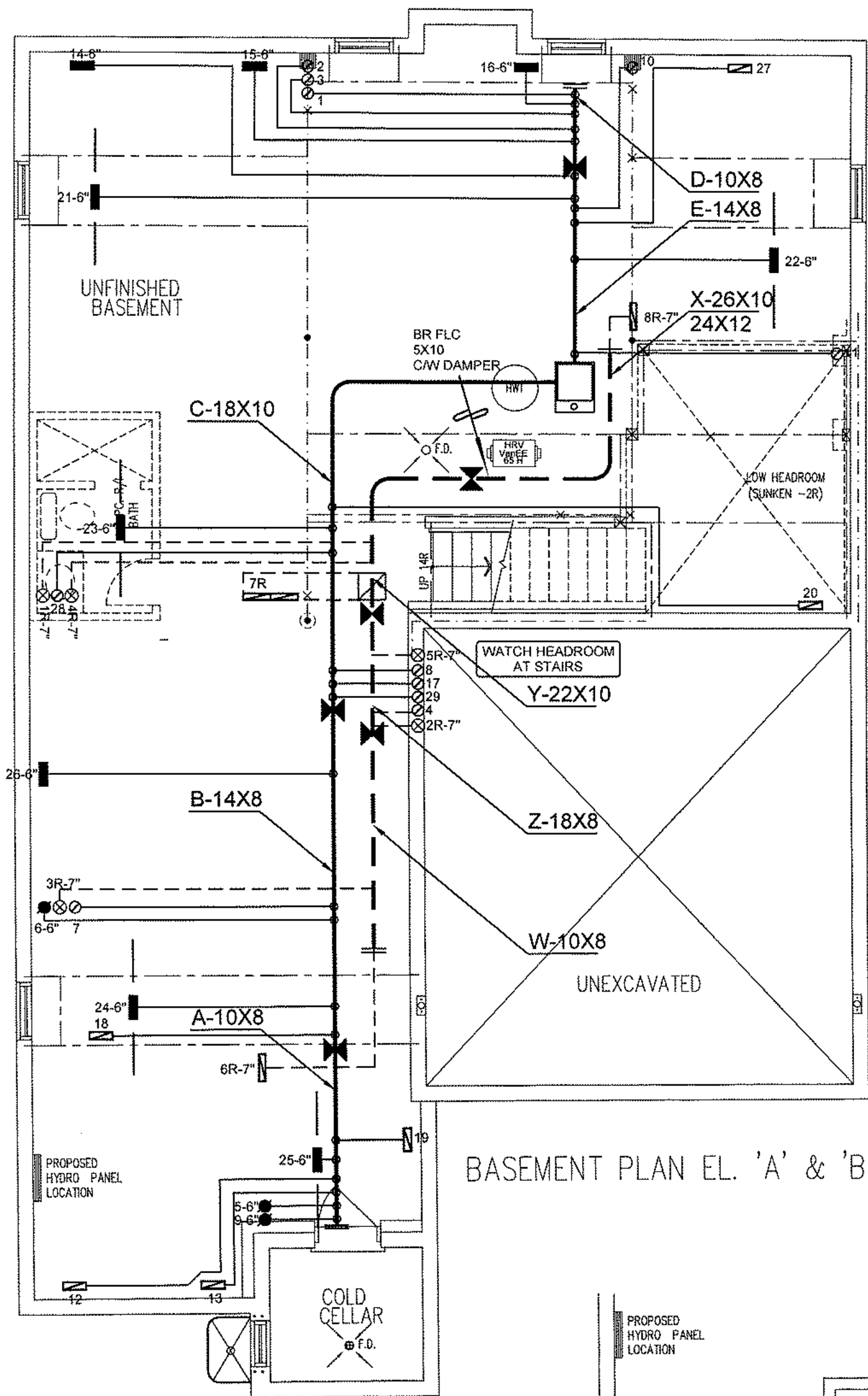
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BUILDING DIVISION

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BASEMENT PLAN EL. 'A' & 'B'













BASEMENT PLAN EL. 'C'

CSA-F280-12

SB-12 PERFORMANCE

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

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

HVAC LEGEND							3.	REVISED AS PER CAD	JUNE/2021	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

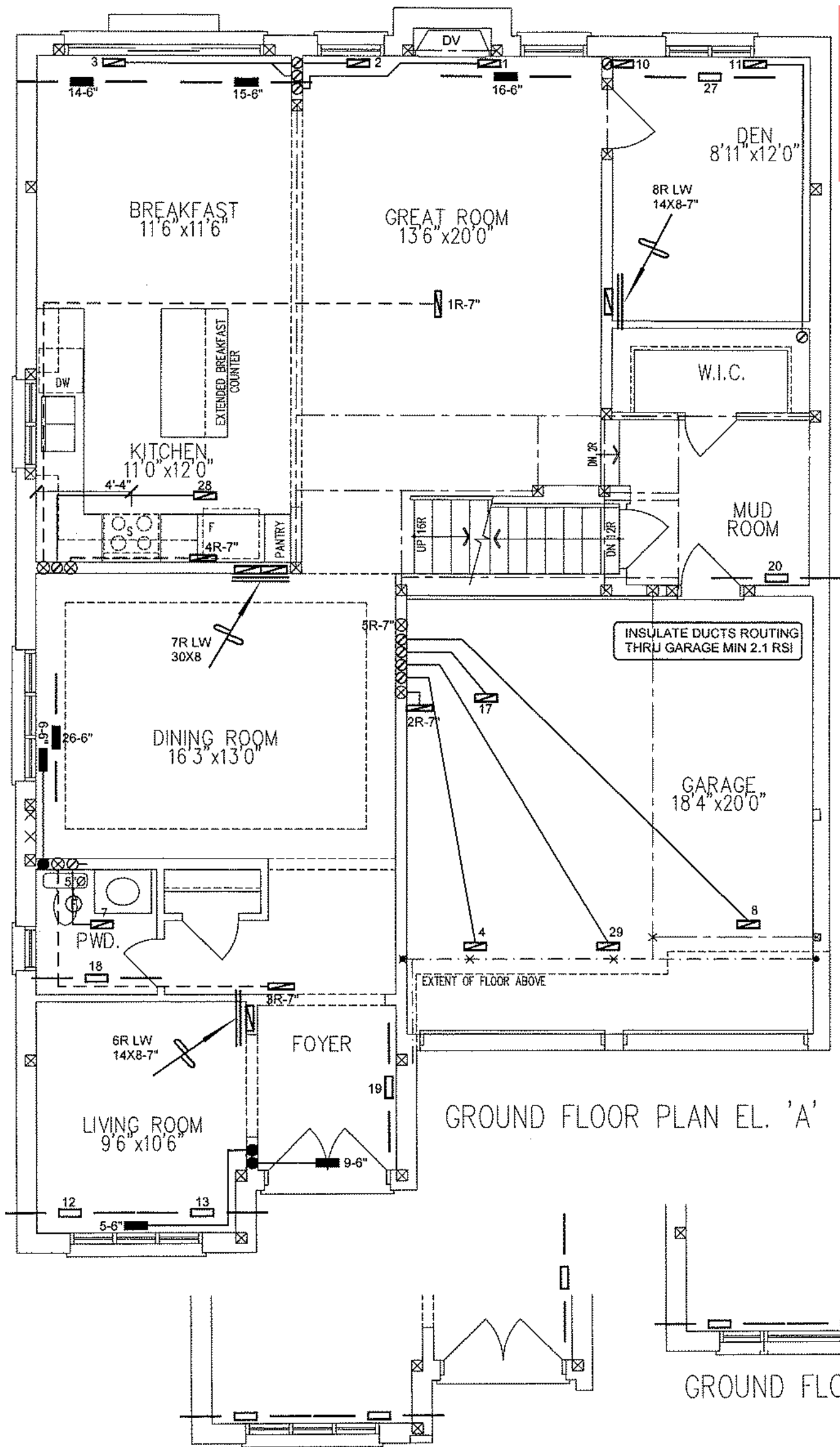
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS 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 ROYAL PINE HOMES		<div>HVACDESIGNS LTD.</div> <div>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</div>	HEAT LOSS 50499 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title BASEMENT HEATING LAYOUT
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			MAKE CARRIER		3RD FLOOR			
OPT. 2ND 4504		3223 sqft	MODEL 59TN6A-060-14V		2ND FLOOR 14 5 4			Date SEPT/2020
			INPUT 60 MBTU/H		1ST FLOOR 10 3 2			
		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.	OUTPUT 58 MBTU/H		BASEMENT 5 1 0			Scale 3/16" = 1'-0"
			COOLING 3.5 TONS		ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5'x0 UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A			
			FAN SPEED 1370 cfm @ 0.8" w.c.					BCIN# 19669
								LO# 87514

08/12/2021

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GROUND FLOOR PLAN EL. 'B'

GROUND FLOOR PLAN EL. 'C'

I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 32.5 OF THE BUILDING CODE.


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

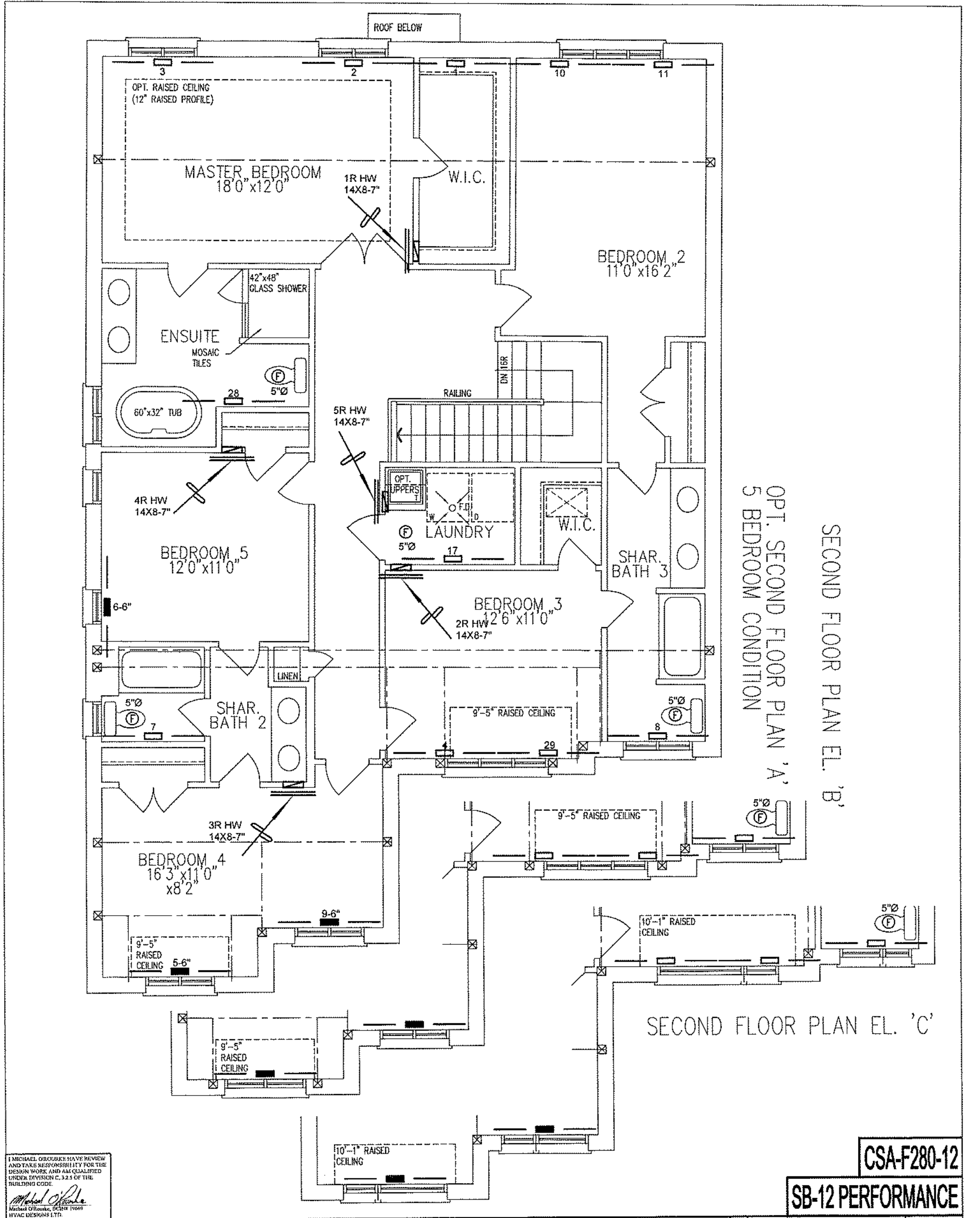
CSA-F280-12

SB-12 PERFORMANCE

HVAC LEGEND						3.	REVISED AS PER CAD	JUNE/2021
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.
REVISIONS								Date

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Client ROYAL PINE HOMES		<div><p>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</p><p>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.</p></div>	Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			Date SEPT/2020	
OPT. 2ND 4504			Scale 3/16" = 1'-0"	
3223 sqft			BCIN# 19669	
		LO#	87514	



I MICHAEL O'BROCK HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.5 OF THE BUILDING CODE.
Michael O'Brock
Michael O'Brock, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12

SB-12 PERFORMANCE

HVAC LEGEND						3.	REVISED AS PER CAD	JUNE/2021
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. REVISED AS PER ARCHITECTURALS APR/2021
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	1. REVISED TO PERFORMANCE SEPT/2020
	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

ROYAL PINE HOMES

Project Name

**CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO**

OPT. 2ND
4504

3223 sqft

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@hvacdsgns.ca
Web: www.hvacdsgns.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.

CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

RECEIVED

Per: _____

Sheet Title

**SECOND FLOOR
HEATING
LAYOUT**

Date

SEPT/2020

Scale

3/16" = 1'-0"

BCIN# 19669

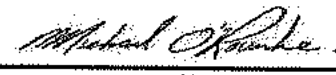
LO# 87514

08/12/2021

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Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information			
Building number, street name		Unit no.	Lot/con.
Municipality RICHMOND HILL	Postal code	Plan number/ other description	
B. Individual who reviews and takes responsibility for design activities			
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.	
Street address 375 FINLEY AVE		Unit no. 202	Lot/con. N/A
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdsgns.ca
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]			
<input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings			
<input checked="" type="checkbox"/> HVAC – House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection			
<input type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> On-site Sewage Systems			
Description of designer's work HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12		Model: 4504 OPT 5 BED 4 BATH Project: CENTREFIELD (WEST GORMLEY)	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u> (print name)		declare that (choose one as appropriate):	
<input type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____			
<input checked="" type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C. SENTENCE 3.2.4.1 (4)</u>			
<input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.			
June 7, 2021 Date		 Signature of Designer	

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

SITE NAME: CENTREFIELD (WEST GORMLEY)										DATE: Jun-21										HEAT LOSS AT °F. 78										CSA-F280-12									
BLUDDER: ROYAL PINE HOMES										LO# 91148										HEAT GAIN AT °F. 13										SB-12 PERFORMANCE									
TYPE: 4604										QFA: 3223										WINTER NATURAL AIR CHANGE RATE 0.219										SUMMER NATURAL AIR CHANGE RATE 0.088									
ROOM USE										WIC										ENS-2										ENS-3									
EXP. WALL										ENS										ENS-2										ENS-3									
CLG. HT.										WIC										ENS-2										ENS-3									
FACTORS										WIC										ENS-2										ENS-3									
GRS.WALL AREA										WIC										ENS-2										ENS-3									
GLAZING										WIC										ENS-2										ENS-3									
NORTH										WIC										ENS-2										ENS-3									
EAST										WIC										ENS-2										ENS-3									
SOUTH										WIC										ENS-2										ENS-3									
WEST										WIC										ENS-2										ENS-3									
SKYL.T.										WIC										ENS-2										ENS-3									
DOORS										WIC										ENS-2										ENS-3									
NET EXPOSED WALL										WIC										ENS-2										ENS-3									
NET EXPOSED BMT WALL ABOVE GR										WIC										ENS-2										ENS-3									
NO ATTIC EXPOSED CLG										WIC										ENS-2										ENS-3									
EXPOSED CLG										WIC										ENS-2										ENS-3									
BASEMENT/CRAWL HEAT LOSS										WIC										ENS-2										ENS-3									
SLAB ON GRADE HEAT LOSS										WIC										ENS-2										ENS-3									
SUBTOTAL HT LOSS										WIC										ENS-2										ENS-3									
LEVEL FACTOR / MULTIPLIER										WIC										ENS-2										ENS-3									
AIR CHANGE HEAT LOSS										WIC										ENS-2										ENS-3									
AIR CHANGE HEAT GAIN										WIC										ENS-2										ENS-3									
DUCT LOSS										WIC										ENS-2										ENS-3									
DUCT GAIN										WIC										ENS-2										ENS-3									
HEAT GAIN PEOPLE										WIC										ENS-2										ENS-3									
HEAT GAIN APPLIANCES/LIGHTS										WIC										ENS-2										ENS-3									
TOTAL HT LOSS BTU/H										WIC										ENS-2										ENS-3									
TOTAL HT GAIN x 1.3 BTU/H										WIC										ENS-2										ENS-3									

ROOM USE		FACTORS		LIV		DIN		RT/OT		DEN		LAUN		WIR		FOY		MUD		BAS	
EXP. WALL	CLG. HT.	GRS. WALL AREA	LOSS GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN
		250		250		250		630		230		0		80		230		242		986	
		25	16.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	37
		25	41.6	40	571	1862	0	0	0	0	0	0	0	0	0	27	588	1122	0	0	0
		10	24.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	174
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	174
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	174
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		0	0	0	0	0	0	0	0	0	0</										

GFA: 3223 LO# 91146

**CARRIER

**CARRIER

Pressure	0.17
S. Loss	0.02
Pressure r/a	0.15

FEMPERATURE RISE 39

CITY OF RICHMOND HILL

BUILDING DIVISION

08/12/2021

RECEIVED

Per: _____

TRUNK	A	B	E	C	C	C	C	C	ENS-2	ENS-3
OUTLET GRILL SIZE	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
COOLING VELOCITY (ft/min)	71	321	543	252	536	103	126			
HEATING VELOCITY (ft/min)										
ROUND DUCT SIZE	6	6	5	4	5	4	4	4	4	4
ADJUSTED PRESSURE	0.08	0.1	0.1	0.08	0.08	0.08	0.08	0.08	0.08	0.08
TOTAL EFFECTIVE LENGTH	197	179	172	206	223	210	210	210	210	210
EQUIVALENT LENGTH	150	140	150	180	180	150	170	170	170	170
ACTUAL DUCT LGH.	47	39	22	26	43	60	40	40	40	40
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
CFM PER RUN COOLING	14	63	74	22	73	9	11	11	11	11
RM GAIN MBH	0.42	1.93	2.26	0.67	2.24	0.28	0.35	0.35	0.35	0.35
CFM PER RUN HEAT	83	56	50	25	37	18	26	26	26	26
RM LOSS MBH	2.95	1.99	1.77	0.90	1.33	0.65	0.91	0.91	0.91	0.91
BAS	25	26	27	28	29	30	31	31	31	31
ROOM NAME	BAS	DIN	DEN	ENS	BED-3	ENS-2	ENS-3	ENS-3	ENS-3	ENS-3
RUN #	25	26	27	28	29	30	31	31	31	31

[illegible]

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

TYPE: 4504
SITE NAME: CENTREFIELD (WEST GORMLEY)
LO # 91146
OPT 5 BED 4 BATH

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	4	@ 10.6 cfm	42.4	cfm
Kitchen & Bathrooms	6	@ 10.6 cfm	63.6	cfm
Other Rooms	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.			TOTAL	212.0 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	212	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	116.6	cfm

PRINCIPAL EXHAUST FAN CAPACITY
Model: VANE 65H Location: BSMT
95.4 cfm ☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM	ΔT °F	FACTOR	% LOSS
95.4 CFM	78 F	1.08	0.25

SUPPLEMENTAL FANS BY INSTALLING CONTRACTOR

Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-4/5	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-3	BY INSTALLING CONTRACTOR	50	✓	3.5
W/R	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.
Model: VANE 65H
155 cfm high 64 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: ROYAL PINE HOMES
Name:
Address:
City:
Telephone #: Fax #:

INSTALLING CONTRACTOR
Name:
Address:
City:
Telephone #: Per: 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: *Michael O'Rourke*
HRAI #: 001820
Date: June-21

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																									
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																									
LO#: 91146		Model: 4504		Builder: ROYAL PINE HOMES		Date: 6/7/2021																																																			
Volume Calculation				Air Change & Delta T Data																																																					
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6.2.6 Sensible Gain due to Air Leakage																																																									
$HG_{sairb} = LR_{airb} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$																																																									
0.219	x	328.53	x	7 °C	x	1.2	=	191 W																																																	
							=	652 Btu/h																																																	
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	=	330 Btu/h																																																	
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																									
$HL_{airrr} = Level Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgr}) + (HL_{aglevel} + HL_{bglevel})\}$																																																									
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HL_{airbv} Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{bwall})</th> <th>Air Leakage Heat Loss Multiplier (LF x HL_{airbv} / HL_{level})</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.5</td> <td rowspan="5" style="text-align: center;">12,718</td> <td>8,378</td> <td>0.759</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>13,147</td> <td>0.290</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>14,056</td> <td>0.181</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)	HL _{airbv} Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{bwall})	Air Leakage Heat Loss Multiplier (LF x HL _{airbv} / HL _{level})	1	0.5	12,718	8,378	0.759	2	0.3	13,147	0.290	3	0.2	14,056	0.181	4	0	0	0.000	5	0	0	0.000																						
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5	0		0	0.000																																																					
<p>*HL_{airbv} = Air leakage heat loss + ventilation heat loss</p> <p>*For a balanced or supply only ventilation system HL_{airrr} = 0</p>																																																									

CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

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Per: _____

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4504	OPT 5 BED 4 BATH	BUILDER: ROYAL PINE HOMES
SFQT: 3223	LO# 91146	SITE: CENTREFIELD (WEST GORMLEY)

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:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	41767.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.40	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 46.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	166.0 ft

2012 OBC - COMPLIANCE PACKAGE

Component	Compliance Package SB-12 PERFORMANCE	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
Basement Walls Minimum RSI (R)-Value	20	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	1.6	-
Skylights Maximum U-Value	2.6	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

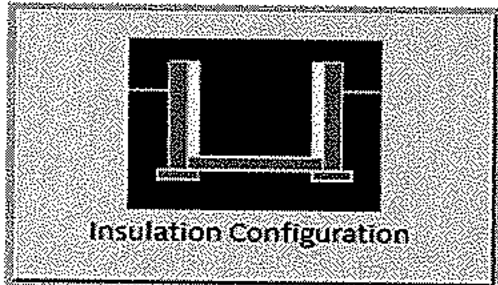
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Per: _____

Michael O'Rourke

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):	14.0	 Insulation Configuration
Floor Width (m):	11.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.9	
Door Area (m ²):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	<div>CITY OF RICHMOND HILL BUILDING DIVISION 08/12/2021 RECEIVED Per: _____</div>
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	1638	

TYPE: 4504
LO# 91146

OPT 5 BED 4 BATH

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):	6.40			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1182.7			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa. 2.50	1104.1 cm ² ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply 45.0	Total Exhaust 45.0		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.219			
Cooling Air Leakage Rate (ACH/H):	0.068			

CITY OF RICHMOND HILL
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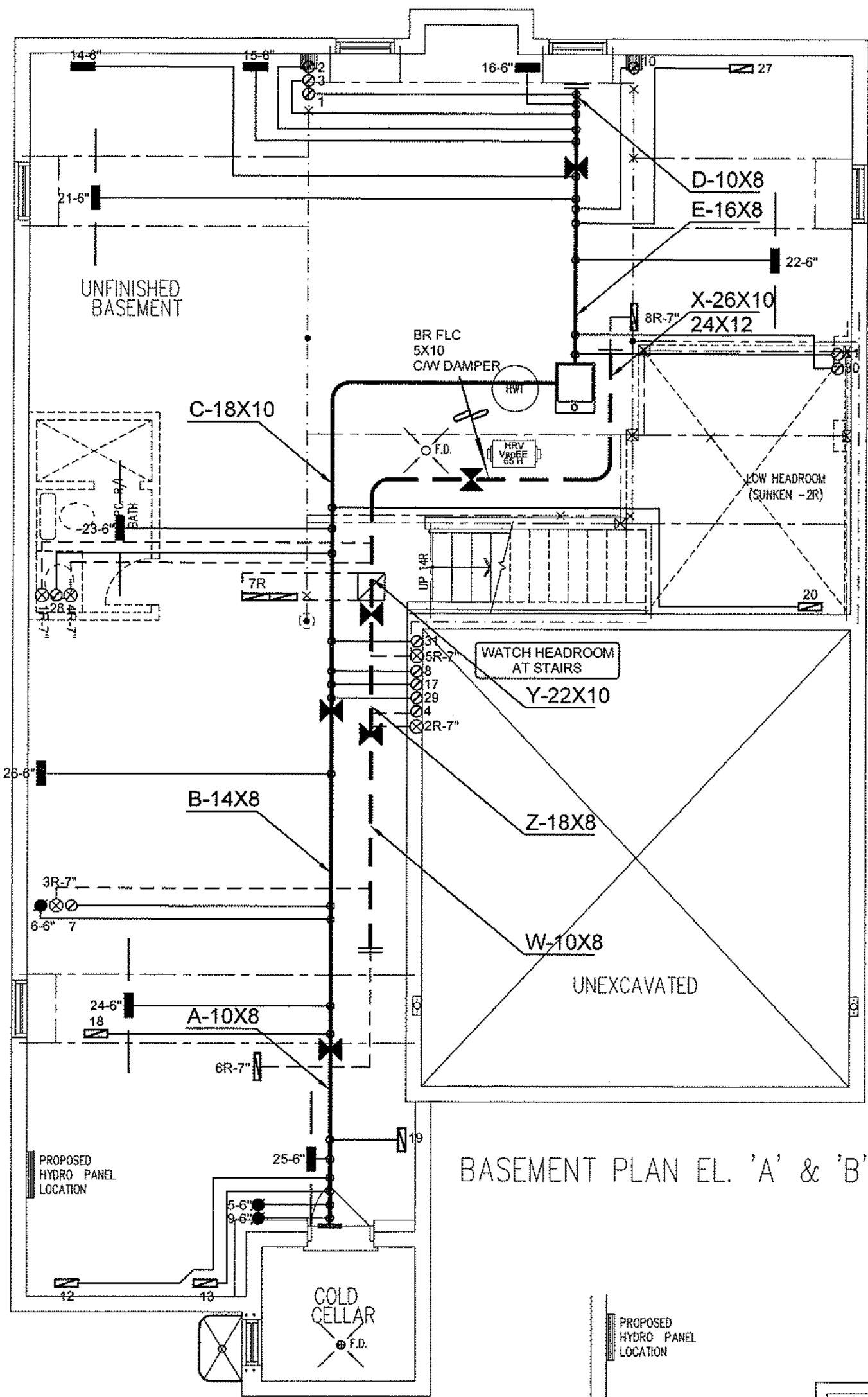
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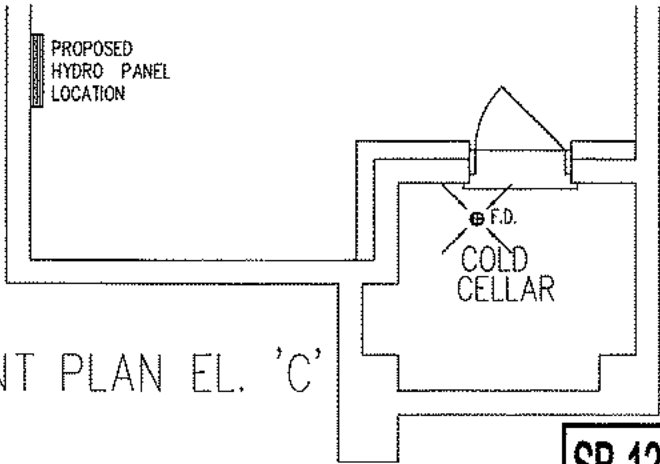
Per: _____

TYPE: 4504
LO# 91146

OPT 5 BED 4 BATH



BASEMENT PLAN EL. 'A' & 'B'



BASEMENT PLAN EL. 'C'

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BUILDING DIVISION
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CSA-F280-12

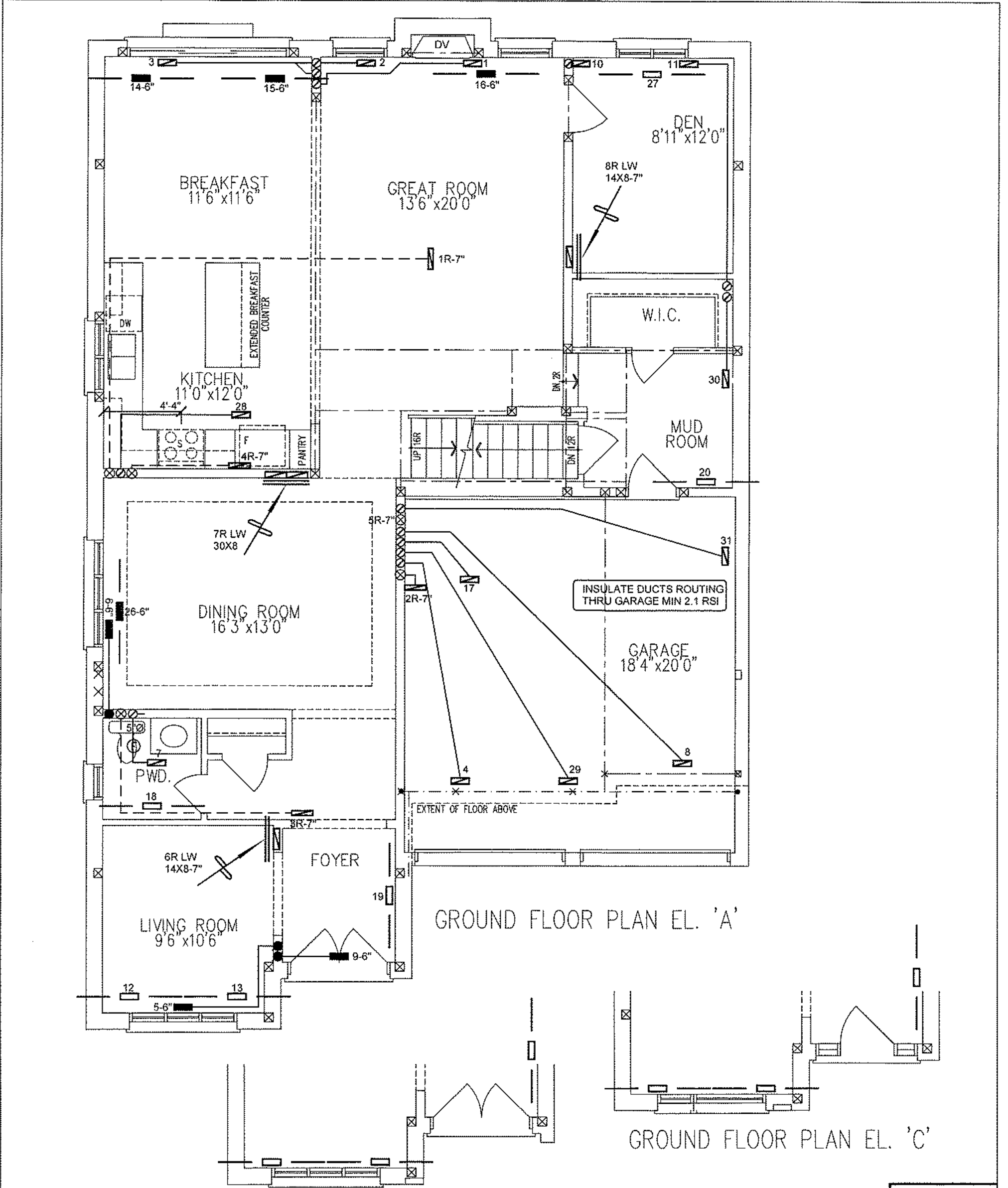
SB-12 PERFORMANCE

I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.1.5 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCINP 19669
HVAC DESIGNS LTD.

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

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 ROYAL PINE HOMES		<div><p>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</p><p>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.</p></div>	HEAT LOSS 50789 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title BASEMENT HEATING LAYOUT	
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			MAKE CARRIER	3RD FLOOR					Date JUNE/2021	
			MODEL 59TN6A-060-14V	2ND FLOOR		16	5	5		
			INPUT 60 MBTU/H	1ST FLOOR		10	3	2		
			OUTPUT 58 MBTU/H	BASEMENT		5	1	0		
OPT. 5 BED 4 BATH 4504 3223 sqft		COOLING 3.5 TONS	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		Scale 3/16" = 1'-0"		BCIN# 19669			
		FAN SPEED 1370 cfm @ 0.6" w.c.			LO#		91146			



I MICHAEL O'BROCKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 32.3 OF THE BUILDING CODE.

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

GROUND FLOOR PLAN EL. 'A'

GROUND FLOOR PLAN EL. 'B'

GROUND FLOOR PLAN EL. 'C'

CSA-F280-12

SB-12 PERFORMANCE

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
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER
						No.	Description
						Date	

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Client

ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO

OPT. 5 BED 4 BATH
4504 3223 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.

CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

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Sheet Title

FIRST FLOOR
HEATING
LAYOUT

Date

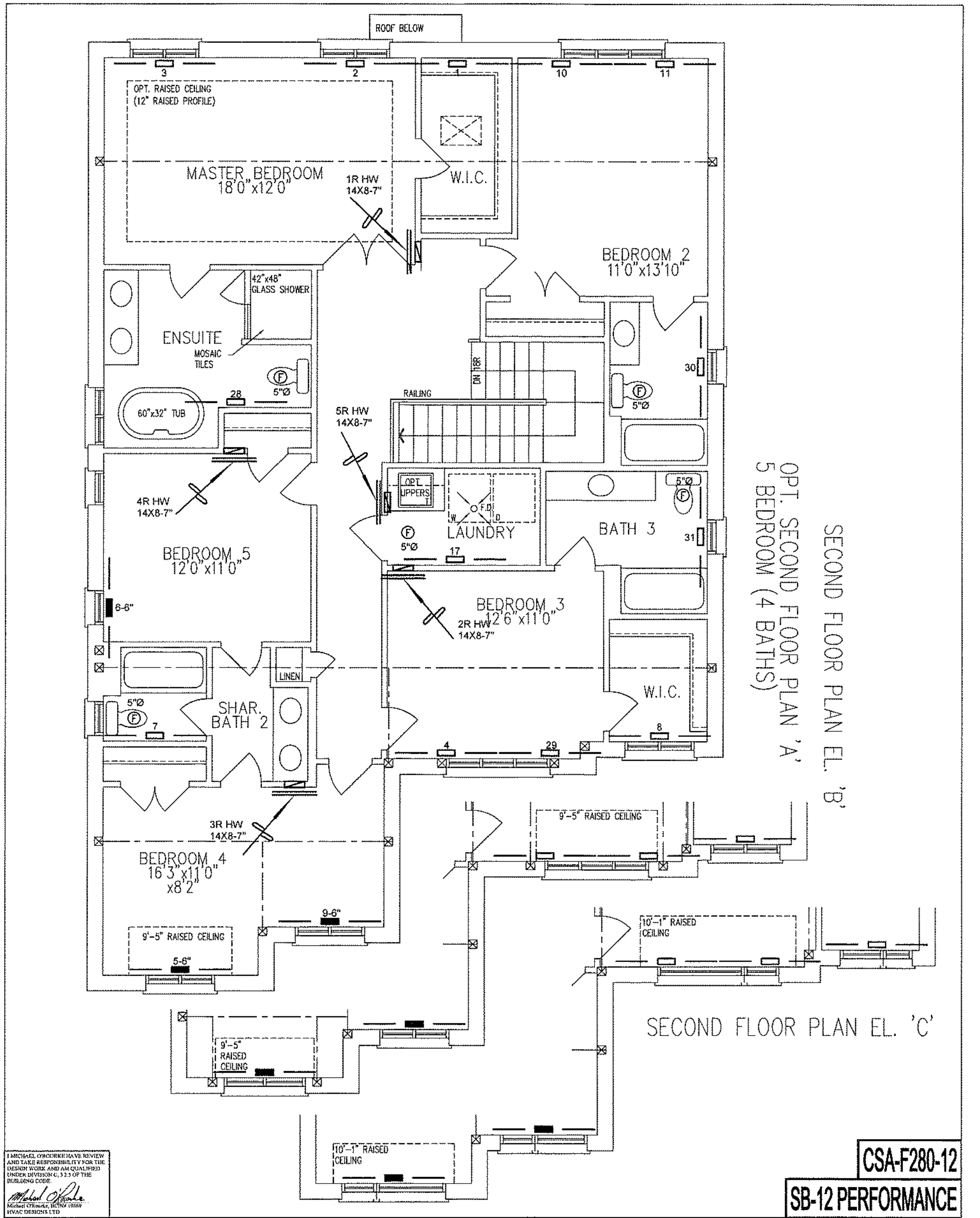
JUNE/2021

Scale

3/16" = 1'-0"

BCIN# 19669

LO# 91146



I MICHAEL O'DRISCOLL HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.3 OF THE BUILDING CODE.

Michael O'Driscoll
Michael O'Driscoll, HON 19969
HVAC DESIGNS LTD.

CSA-F280-12
SB-12 PERFORMANCE

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

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Client
ROYAL PINE HOMES

Project Name
**CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO**

**OPT. 5 BED 4 BATH
4504 3223 sqft**

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@hvacadesigns.ca
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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.

**CITY OF RICHMOND HILL
BUILDING DIVISION**

08/12/2021

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Sheet Title
**SECOND FLOOR
HEATING
LAYOUT**

Date
JUNE/2021

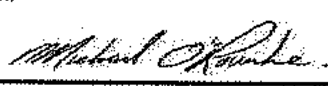
Scale
3/16" = 1'-0"

BCIN# 19669

LO# 91146

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information					
Building number, street name				Unit no.	Lot/con.
Municipality RICHMOND HILL		Postal code	Plan number/ other description		
B. Individual who reviews and takes responsibility for design activities					
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.			
Street address 375 FINLEY AVE				Unit no. 202	Lot/con. N/A
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdesigns.ca		
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()			
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]					
<input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings		<input checked="" type="checkbox"/> HVAC – House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection		<input type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> On-site Sewage Systems	
Description of designer's work HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12			Model: 4504 OPT. GROUND - 5 BED 4 BATH Project: CENTREFIELD (WEST GORMLEY)		
D. Declaration of Designer					
I, <u>MICHAEL O'ROURKE</u> (print name) declare that (choose one as appropriate):					
<input type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____					
<input checked="" type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>					
<input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____					
I certify that:					
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.					
June 7, 2021					
Date			Signature of Designer		

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d). of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Application for a Permit Construct or Demolish – Effective January 1, 2015

1
2
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CITY OF RICHMOND HILL
BUILDING DIVISION
08/12/2021
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ROOM USE	EXP. WALL CLG. HT.	FACTORS		LIV	DIN	RTGT	LAUN	WIR	FOY	MUD	SAS
		LOSS	GAIN	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS
		AREA									
GRS.WALL AREA		260			260	920	0	60	230	178	996
GLAZING											
NORTH		0	0	0	0	0	0	0	0	0	4
EAST		40	871	0	0	0	0	0	23	0	57
SOUTH		0	0	0	0	0	0	0	10	0	64
WEST		0	0	0	28	349	0	0	545	0	0
SKYLIT.		0	0	0	0	127	0	0	0	0	0
DOORS		0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL		210	353	145	222	3258	0	0	517	85	0
NET EXPOSED W/RT WALL ABOVE ON		3.7	0.6	0	0	0	0	0	0	0	0
EXPOSED CLG		1.3	0.6	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG		2.8	1.3	0	0	0	0	0	0	0	0
EXPOSED FLOOR		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
SUB TOTAL HT LOSS		1754			1544	6383	239	431	1840	1173	8378
SUB TOTAL HT GAIN			1907		351	6213		269	1252		952
LEVEL FACTOR / MULTIPLIER		0.30	0.27		0.30	0.27	0.20	0.27	0.30	0.27	0.50
AIR CHANGE HEAT LOSS		469			410	1694	44	109	468	311	6359
AIR CHANGE HEAT GAIN			77		36	255	3	11	53	8	42
DUCT LOSS		0	0	0	0	0	28	0	0	0	0
DUCT GAIN		0	0	0	0	0	74	0	0	0	0
HEAT GAIN PEOPLE		0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS			655		655	555	0	0	0	0	0
TOTAL HT LOSS BTU/H		2220			1853	8077	311	519	2526	1484	14737
TOTAL HT GAIN x 1.3 BTU/H			3304		2904	972	1053	352	1697	252	2182

Per: _____

MICHAEL J. FORD
49961-RTB 18/11/1964

SITE NAME: CENTREFIELD (WEST GORMLEY)
BUILDER: ROYAL PINE HOMES

TYPE: 4504 OPT. GROUND - 5 BED 4 BATH

DATE: Jun-21

GFA: 3223 LO# 91148

HEATING CFM 1370
TOTAL HEAT LOSS 49,723
AIR FLOW RATE CFM 27.55

COOLING CFM 1370
TOTAL HEAT GAIN 42,323
AIR FLOW RATE CFM 32.37

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

plenum pressure s/a 0.18
max s/a diff press. loss 0.02
min adjusted pressure s/a 0.16

59TNA-060-14V
FAN SPEED 60
LOW 820
MEDLOW 0
MEDIUM 1370
HIGH 1520

AFUE = 97 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 58,000
DESIGN CFM = 1370
CFM @ 5" E.S.P.

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	10	5
R/A	0	0	5	3	1

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

ROOM NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
WIC	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
RM LOSS MBH	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
CFM PER RUN HEAT	9	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
RM GAIN MBH	0.10	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
CFM PER RUN COOLING	3	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH	47	69	67	54	81	76	66	72	76	70	66	71	65	43	30	38	55	59	51	30	16	27	48	49
EQUIVALENT LENGTH	140	150	160	120	160	170	170	170	170	140	170	170	170	130	120	140	130	120	160	90	120	120	110	110
TOTAL EFFECTIVE LENGTH	187	219	227	174	241	246	236	212	226	210	236	241	235	173	150	178	185	179	241	120	136	147	158	158
ADJUSTED PRESSURE	0.09	0.08	0.08	0.1	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.1	0.11	0.1	0.09	0.1	0.08	0.07	0.14	0.12	0.11	0.1
ROUND DUCT SIZE	4	5	5	5	6	6	6	4	6	5	5	5	5	5	5	5	4	4	5	5	6	6	6	6
HEATING VELOCITY (ft/min)	103	288	286	279	270	168	172	149	270	228	228	228	228	411	411	411	103	161	470	301	413	413	413	413
COOLING VELOCITY (ft/min)	34	477	477	543	444	321	126	69	444	367	367	389	389	551	551	551	390	126	404	59	71	71	71	71
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10

ROOM NAME	25	26	27	28	29	30	31
BAS	2.95	1.95	2.02	0.95	1.39	0.59	0.48
RM LOSS MBH	81	54	56	26	38	16	13
CFM PER RUN HEAT	0.44	2.00	2.32	0.68	2.30	0.23	0.18
RM GAIN MBH	14	65	75	22	74	7	6
CFM PER RUN COOLING	0.16	0.17	0.17	0.17	0.17	0.17	0.17
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH	57	49	44	43	40	60	40
EQUIVALENT LENGTH	150	140	150	180	180	150	170
TOTAL EFFECTIVE LENGTH	207	189	194	223	220	210	210
ADJUSTED PRESSURE	0.08	0.09	0.09	0.08	0.08	0.08	0.08
ROUND DUCT SIZE	6	6	5	4	5	4	4
HEATING VELOCITY (ft/min)	413	275	411	298	275	184	149
COOLING VELOCITY (ft/min)	71	331	551	252	543	80	69
OUTLET GRILL SIZE	4X10	4X10	3X10	3X10	3X10	3X10	3X10

TRUNK	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	0.07	9.4	10	583	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK B	0.07	11.3	14	856	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK C	0.07	13.2	20	856	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK D	0.07	8.8	10	8	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK E	0.07	11.5	16	8	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK F	0.07	16.3	26	759	0	0.00	0	0	0	0	0.00	0	0	0

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
AIR VOLUME	115	115	115	115	130	130	305	140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH	95	65	98	88	60	67	47	18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	195	245	215	235	205	190	245	145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LENGTH	290	310	313	323	265	257	292	163	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.05	0.05	0.05	0.05	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
ROUND DUCT SIZE	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
INLET GRILL SIZE	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14

CITY OF RICHMOND HILL
BUILDING DIVISION
08/12/2021
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TYPE: 4504
SITE NAME: CENTREFIELD (WEST GORMLEY)

LO # 91148
OPT. GROUND - 5 BED 4 BATH

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	4	@ 10.6 cfm	42.4	cfm
Kitchen & Bathrooms	6	@ 10.6 cfm	63.6	cfm
Other Rooms	5	@ 10.6 cfm	53.0	cfm
Table 9.32.3.A.			TOTAL	201.4 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	201.4	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	106.0	cfm

PRINCIPAL EXHAUST FAN CAPACITY
Model: VANEE 65H Location: BSMT
95.4 cfm ☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM	ΔT °F	FACTOR	% LOSS
95.4 CFM	78 F	1.08	0.25

SUPPLEMENTAL FANS BY INSTALLING CONTRACTOR

Location	Model	cfm	HVI	Score
ENS	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-4/5	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS 3	BY INSTALLING CONTRACTOR	50	✓	3.5
W/R	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.
Model: VANEE 65H
155 cfm high 64 cfm low
75 % Sensible Efficiency @ 32 deg F (0 deg C) ☒ HVI Approved

LOCATION OF INSTALLATION
Lot: Concession
Township: Plan:
Address:
Roll # Building Permit #

BUILDER: ROYAL PINE HOMES
Name:
Address:
City:
Telephone #: Fax #:

INSTALLING CONTRACTOR
Name:
Address:
City:
Telephone #: Fax #:

DESIGNER CERTIFICATION Per:
I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.
Name: HVAC Designs Ltd.
Signature: *Michael O'Rourke*
HRAI #: 001820
Date: June-21

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																															
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																															
LO#: 91148	Model: 4504	Builder: ROYAL PINE HOMES	Date: 6/7/2021																																																																												
Volume Calculation		Air Change & Delta T Data																																																																													
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$HL_{airb} = LR_{airb} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$																																																																															
0.219	x	328.53	x	43 °C	x	1.2	=	3727 W																																																																							
								=	12718 Btu/h																																																																						
5.2.3.2 Heat Loss due to Mechanical Ventilation																																																																															
$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																																															
95 CFM	x	78 °F	x	1.08	x	0.25	=	2004 Btu/h																																																																							
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																																															
$HL_{airr} = Level Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{aglevel} + HL_{bglevel})\}$																																																																															
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<p>*HL_{airbv} = Air leakage heat loss + ventilation heat loss</p> <p>*For a balanced or supply only ventilation system HL_{airbv} = 0</p>																																																																															

CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4504	OPT. GROUND - 5 BED 4 BATH	BUILDER: ROYAL PINE HOMES
SFQT: 3223	LO# 91148	SITE: CENTREFIELD (WEST GORMLEY)

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:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	41767.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.40	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 46.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	166.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component**

**CITY OF RICHMOND HILL
BUILDING DIVISION**

08/12/2021

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**Compliance Package
SB-12 PERFORMANCE**

Nominal	Min. Eff.
60	59.20
31	27.70
31	29.80
22+1.5	18.50
20	21.12
-	-
10	10
10	11.13
1.6	-
2.6	-
0.96	-
75%	-
TE=94%	-

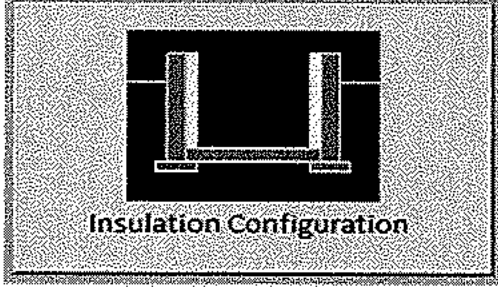
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



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):	14.0	 Insulation Configuration
Floor Width (m):	11.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.9	
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):	1638	

TYPE: 4504 CITY OF RICHMOND HILL OPT. GROUND - 5 BED 4 BATH
LO# 91148 BUILDING DIVISION

08/12/2021

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Per: _____

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):	6.40			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1182.7			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1104.1 cm ²		
	2.50	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):	0.219			
Cooling Air Leakage Rate (ACH/H):	0.068			

CITY OF RICHMOND HILL
BUILDING DIVISION

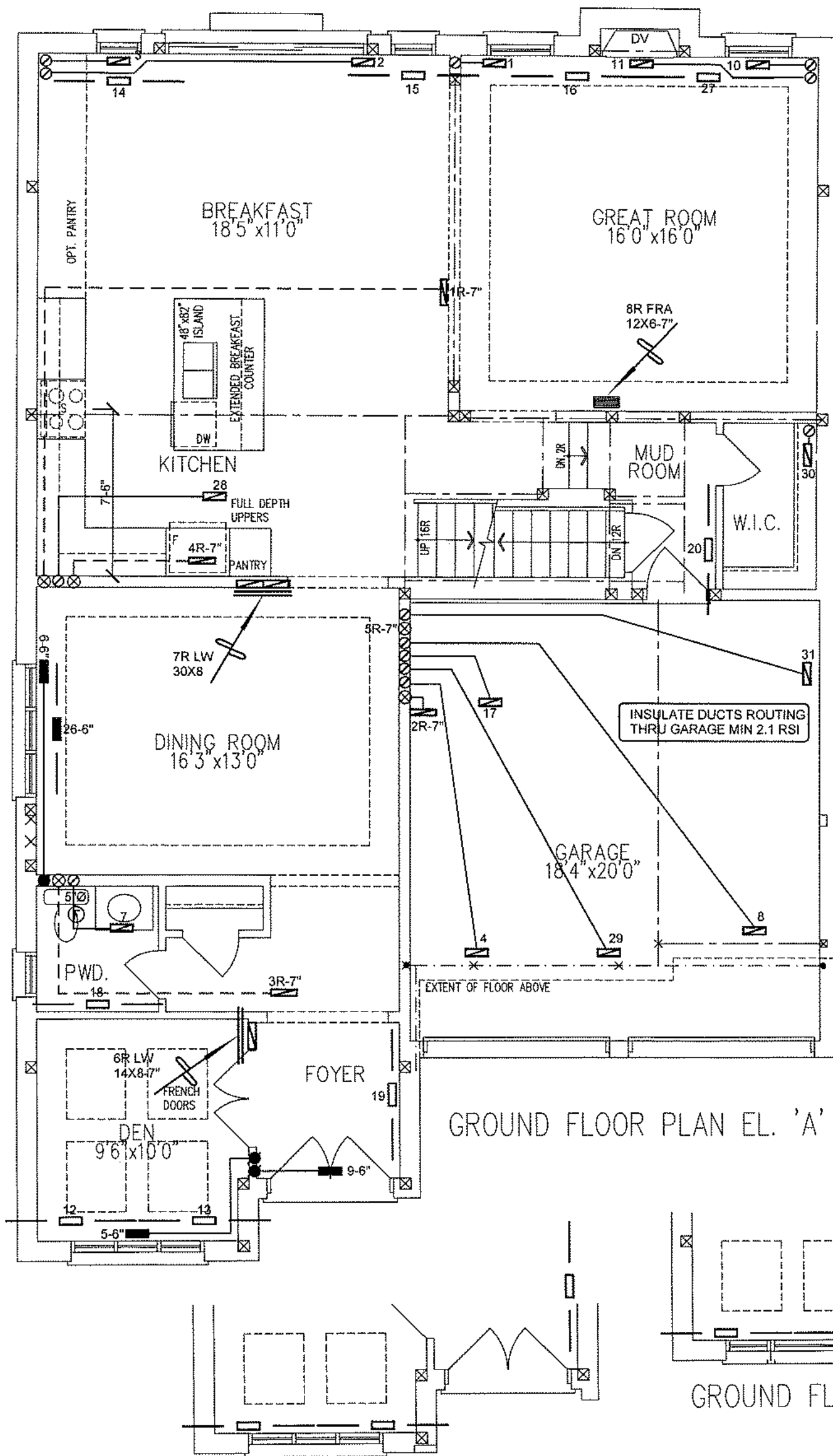
08/12/2021

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Per: _____

TYPE: 4504
LO# 91148

OPT. GROUND - 5 BED 4 BATH



GROUND FLOOR PLAN EL. 'A'

GROUND FLOOR PLAN EL. 'C'

GROUND FLOOR PLAN EL. 'B'

I MICHAEL OROURKE 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, DCEM 19669
HVAC DESIGNS LTD.

CSA-F280-12

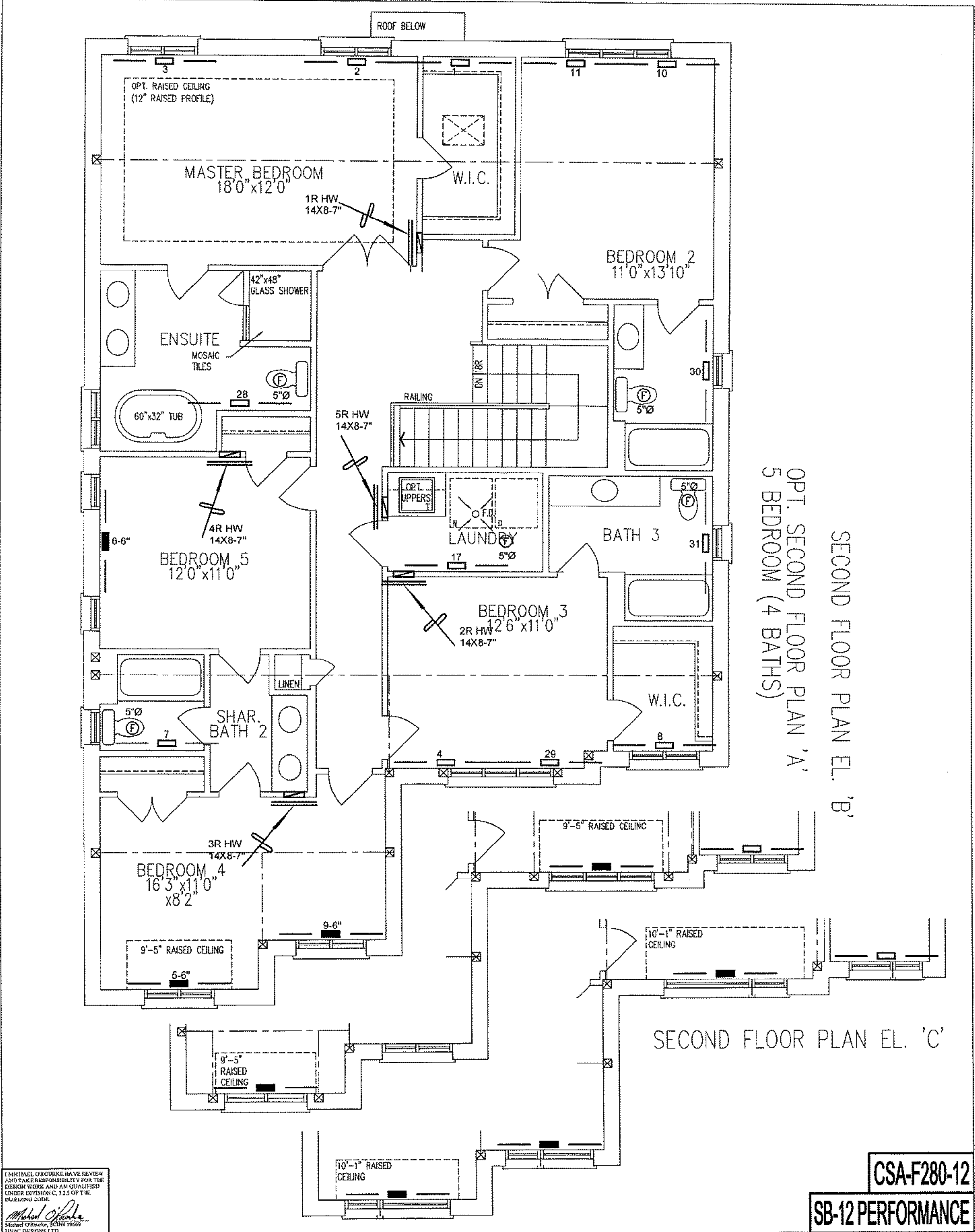
SB-12 PERFORMANCE

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
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	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 ROYAL PINE HOMES		<div><div><div><div><div>HVAC</div><div>DESIGNS LTD.</div></div></div><div>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</div></div></div>	<div><div>CITY OF RICHMOND HILL BUILDING DIVISION</div><div>08/12/2021</div><div>RECEIVED</div><div>Per: _____</div></div>	Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO OPT. GROUND - 5 BED 4 BATH 4504				Date JUNE/2021	Scale 3/16" = 1'-0"
3223 sqft		BCIN# 19669			
		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.		LO#	91148



I MICHAEL O'Rourke HAVE REVIEWED 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

SB-12 PERFORMANCE

HVAC LEGEND						3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	
	SUPPLY AIR GRILLE		8" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	
REVISIONS								Date

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Client ROYAL PINE HOMES		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	<div>CITY OF RICHMOND HILL BUILDING DIVISION 08/12/2021 RECEIVED Per: _____</div>	Sheet Title SECOND FLOOR HEATING LAYOUT	
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO OPT. GROUND - 5 BED 4 BATH 4504				Date JUNE/2021	Scale 3/16" = 1'-0"
3223 sqft		BCIN# 19669			
		LO#		91148	

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information			
Building number, street name		Unit no.	Lot/con.
Municipality	Postal code	Plan number/ other description	
RICHMOND HILL			
B. Individual who reviews and takes responsibility for design activities			
Name		Firm	
MICHAEL O'ROURKE		HVAC DESIGNS LTD.	
Street address		Unit no.	Lot/con.
375 FINLEY AVE		202	N/A
Municipality	Postal code	Province	E-mail
AJAX	L1S 2E2	ONTARIO	info@hvacdesigns.ca
Telephone number	Fax number	Cell number	
(905) 619-2300	(905) 619-2375	()	
C. Design activities undertaken by individual identified in Section B. (Building Code Table 3.5.2-1 OF Division C)			
<input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings			
<input checked="" type="checkbox"/> HVAC – House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection			
<input type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> On-site Sewage Systems			
Description of designer's work		Model: 4504	
HEAT LOSS / GAIN CALCULATIONS		OPT. GROUND & OPT 2ND	
DUCT SIZING		Project: CENTREFIELD (WEST GORMLEY)	
RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY			
RESIDENTIAL SYSTEM DESIGN per CSA-F280-12			
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u>		declare that (choose one as appropriate):	
(print name)			
<input type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.			
Individual BCIN: _____ Firm BCIN: _____			
<input checked="" type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code.			
Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C. SENTENCE 3.2.4. (4)</u>			
<input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.			
June 7, 2021		Signature of Designer	
Date			

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Application for a Permit Construct or Demolish – Effective January 1, 2015

SITE NAME: CENTREFIELD (WEST GORMLEY)

BUILDER: ROYAL PINE HOMES

TYPE: 4534

OPT. GROUND & OPT 2ND

GFA: 3223

DATE: Jun-21

LOF: 99454

WINTER NATURAL AIR CHANGE RATE 0.219

SUMMER NATURAL AIR CHANGE RATE 0.068

HEAT LOSS AT °F. 78

HEAT GAIN AT °F. 13

CSA-F380-12

SB-12 PERFORMANCE

ROOM USE	EXP. WALL CLG. HT.	MBR	ENS	W6C	BED-3	BED-4	ENS-4/5	BED-5	ENS-3
GRS WALL AREA GLAZING		32	10	6	37	46	5	12	23
NORTH	21.3	16.0	0	0	0	0	0	0	0
EAST	21.8	41.6	0	0	0	0	0	0	0
SOUTH	21.8	24.9	0	0	0	0	0	0	0
WEST	21.8	41.6	0	0	0	0	0	0	0
SKYLIT.	35.8	101.2	0	0	0	0	0	0	0
DOORS	25.8	4.3	0	0	0	0	0	0	0
NET EXPOSED WALL	4.2	0.7	254	1194	196	75	315	62	48
NET EXPOSED ASMT WALL ABOVE GR	3.7	0.5	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	289	380	170	134	183	73	68
NO ATTIC EXPOSED CLG	2.8	1.3	0	0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS									
SLAB ON GRADE HEAT LOSS									
SUBTOTAL HT LOSS			2358	275	2294	1488	2223	2136	1652
LEVEL FACTOR / MULTIPLIER	0.20	0.15	0.20	0.15	0.20	0.15	0.20	0.15	0.20
AIR CHANGE HEAT LOSS	413	413	141	49	402	574	80	178	251
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0	0	0
DUCT LOSS									
DUCT GAIN									
HEAT GAIN PEOPLE	240	468	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS		655	0	0	0	0	0	0	0
TOTAL HT LOSS BTU/H		2771	946	327	2896	3849	540	1192	2143
TOTAL HT GAIN x 1.3 BTU/H		4000	575	95	3181	5360	347	1559	1603

CITY OF RICHMOND HILL
BUILDING DIVISION
08/12/2021
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Per: _____

ROOM USE	EXP. WALL CLG. HT.	LIV	DIN	KITCH	LAUN	WTR	FOY	MUD	BAS
GRS WALL AREA GLAZING		205	250	920	0	60	230	176	996
NORTH	21.8	16.0	0	0	0	0	0	0	4
EAST	21.8	41.6	0	0	0	0	0	0	87
SOUTH	21.8	24.9	0	0	0	0	0	0	64
WEST	21.8	41.6	0	0	0	0	0	0	0
SKYLIT.	35.8	101.2	0	0	0	0	0	0	174
DOORS	25.8	4.3	0	0	0	0	0	0	159
NET EXPOSED WALL	4.2	0.7	210	853	146	222	924	164	332
NET EXPOSED ASMT WALL ABOVE GR	3.7	0.5	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	85
NO ATTIC EXPOSED CLG	2.8	1.3	0	0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS									488
SLAB ON GRADE HEAT LOSS									1814
SUBTOTAL HT LOSS		1764	1644	6213	79	411	269	1173	982
LEVEL FACTOR / MULTIPLIER	0.30	0.29	0.30	0.29	0.20	0.30	0.30	0.30	0.30
AIR CHANGE HEAT LOSS	511	511	445	1858	42	120	536	342	6359
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0	0	0
DUCT LOSS									42
DUCT GAIN									0
HEAT GAIN PEOPLE	240	468	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS		655	0	0	0	0	0	0	0
TOTAL HT LOSS BTU/H		2265	1993	8241	308	530	2375	1615	655
TOTAL HT GAIN x 1.3 BTU/H		3303	2606	9776	1083	352	1697	252	14737

TOTAL HEAT GAIN BTU/H: 42265

TONS: 3.52

LOSSES DUE TO VENTILATION LOAD BTU/H: 2094

STRUCTURAL HEAT LOSS: 49195

TOTAL COMBINED HEAT LOSS BTU/H: 51199

Michael O'Rourke

INDIVIDUAL BCIR: 15659

MICHAEL O'ROURKE

TYPE: 4504
SITE NAME: CENTREFIELD (WEST GORMLEY)

LO # 90464
OPT. GROUND & OPT 2ND

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	4	@ 10.6 cfm	42.4	cfm
Kitchen & Bathrooms	5	@ 10.6 cfm	53.0	cfm
Other Rooms	5	@ 10.6 cfm	53.0	cfm
Table 9.32.3.A	TOTAL			190.8 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	190.8	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	95.4	cfm

PRINCIPAL EXHAUST FAN CAPACITY
Model: VANE 65H Location: BSMT
95.4 cfm ☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM	ΔT °F	FACTOR	% LOSS
95.4 CFM	78 F	1.08	0.25

SUPPLEMENTAL FANS BY INSTALLING CONTRACTOR

Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-4/5	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS 3	BY INSTALLING CONTRACTOR	50	✓	3.5
W/R	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11
Model: VANE 65H
155 cfm high 64 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: ROYAL PINE HOMES
Name:
Address:
City:
Telephone #: Fax #:

INSTALLING CONTRACTOR
Name: CITY OF RICHMOND HILL BUILDING DIVISION
Address:
City: 08/12/2021
Telephone #: Fax #: RECEIVED

DESIGNER CERTIFICATION Per:
I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.
Name: HVAC Designs Ltd.
Signature: Michael O'Rourke
HRAI #: 001820
Date: June-21

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																									
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																									
LO#: 90464		Model: 4504		Builder: ROYAL PINE HOMES		Date: 6/7/2021																																																																			
Volume Calculation				Air Change & Delta T Data																																																																					
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<p>5.2.3.1 Heat Loss due to Air Leakage</p> $HL_{airb} = LR_{airb} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ <p>0.219 x 328.53 x 43 °C x 1.2 = 3727 W</p> <p>= 12718 Btu/h</p>				<p>6.2.6 Sensible Gain due to Air Leakage</p> $HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ <p>= 0.068 x 328.53 x 7 °C x 1.2 = 191 W</p> <p>= 652 Btu/h</p>																																																																					
<p>5.2.3.2 Heat Loss due to Mechanical Ventilation</p> $HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>95 CFM x 78 °F x 1.08 x 0.25 = 2004 Btu/h</p>				<p>6.2.7 Sensible heat Gain due to Ventilation</p> $HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>95 CFM x 13 °F x 1.08 x 0.25 = 330 Btu/h</p>																																																																					
<p>5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)</p> $HL_{airrr} = Level Factor \times HL_{airbv} \times \{ (HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel}) \}$ <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HL_{airbv} Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{agcr} + HL_{bgcr})</th> <th>Air Leakage Heat Loss Multiplier (LF x HL_{airbv} / HL_{level})</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.5</td> <td rowspan="5">12,718</td> <td>8,378</td> <td>0.759</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>13,104</td> <td>0.291</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>14,521</td> <td>0.175</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> <p>*HL_{airbv} = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HL_{airve} = 0</p>										Level	Level Factor (LF)	HL _{airbv} Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{agcr} + HL _{bgcr})	Air Leakage Heat Loss Multiplier (LF x HL _{airbv} / HL _{level})	1	0.5	12,718	8,378	0.759	2	0.3	13,104	0.291	3	0.2	14,521	0.175	4	0	0	0.000	5	0	0	0.000																																						
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CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

RECEIVED

Per: _____

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4504	OPT. GROUND & OPT 2ND	BUILDER: ROYAL PINE HOMES
SFQT: 3223	LO# 90464	SITE: CENTREFIELD (WEST GORMLEY)

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:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	41767.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.40	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 46.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	166.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component**

Ceiling with Attic Space Minimum RSI (R)-Value
Ceiling Without Attic Space Minimum RSI (R)-Value
Exposed Floor Minimum RSI (R)-Value
Walls Above Grade Minimum RSI (R)-Value
Basement Walls Minimum RSI (R)-Value
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
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value
Windows and Sliding Glass Doors Maximum U-Value
Skylights Maximum U-Value
Space Heating Equipment Minimum AFUE
HRV Minimum Efficiency
Domestic Hot Water Heater Minimum EF

**CITY OF RICHMOND HILL
BUILDING DIVISION****08/12/2021****RECEIVED**

Per: _____

**Compliance Package
SB-12 PERFORMANCE**

Nominal	Min. Eff.
60	59.20
31	27.70
31	29.80
22+1.5	18.50
20	21.12
-	-
10	10
10	11.13
1.6	-
2.6	-
0.96	-
75%	-
TE=94%	-

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

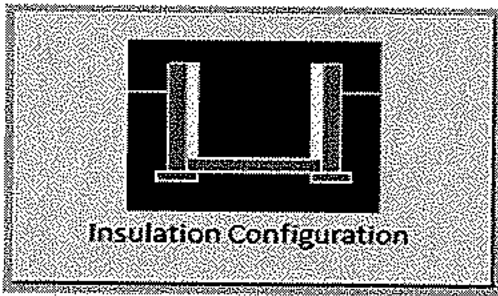
08/12/2021

RECEIVED

Per: _____

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):	14.0	
Floor Width (m):	11.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.9	
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):	1638	

TYPE: 4504
LO# 90464

OPT. GROUND & OPT 2ND

08/12/2021

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Per: _____

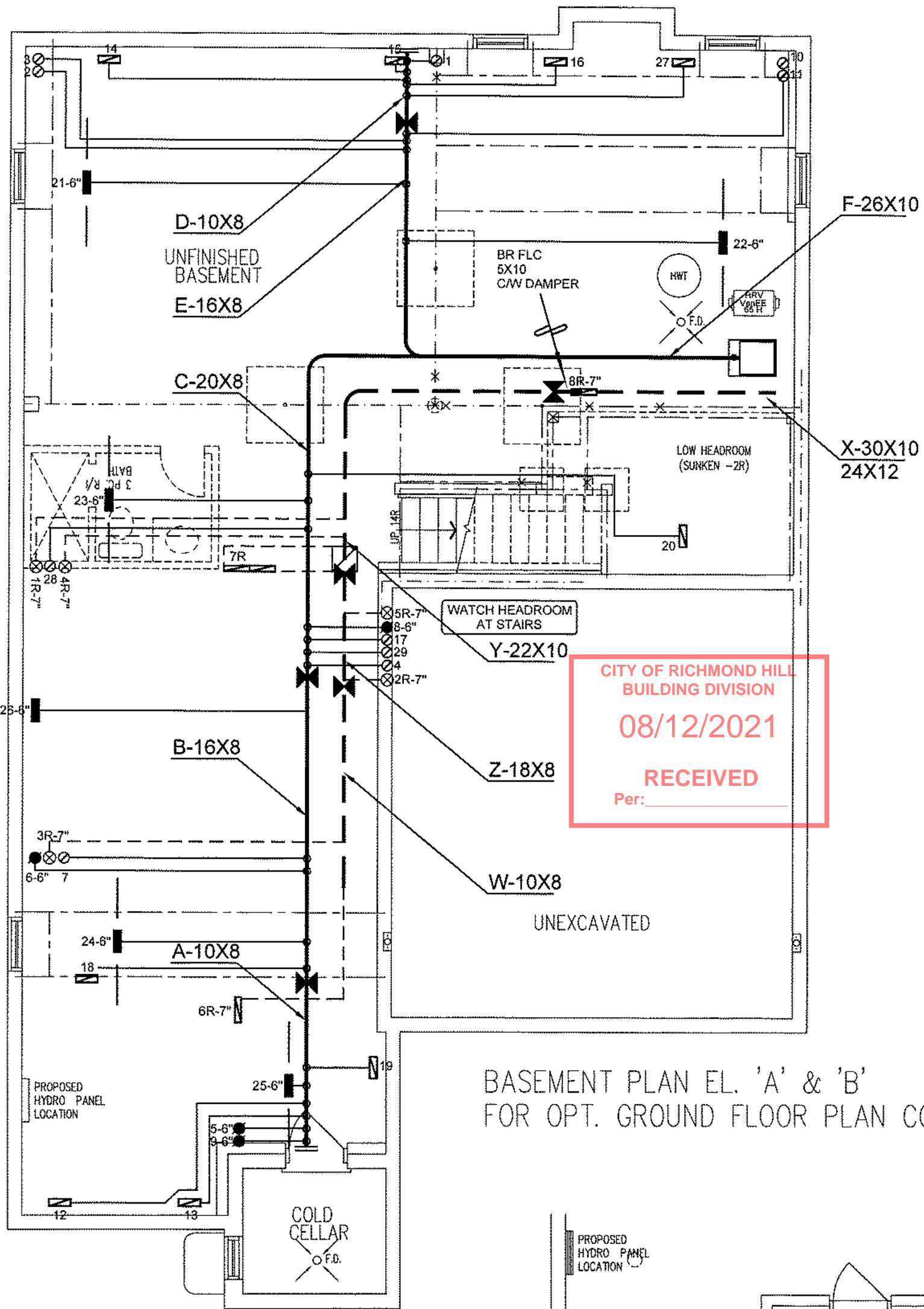
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

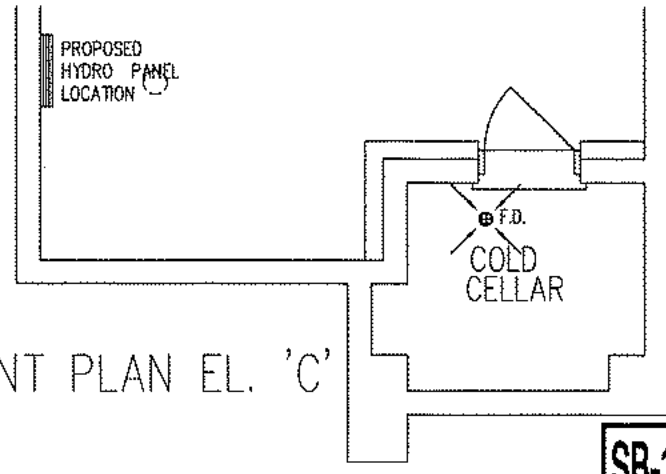
Weather Station Description			
Province:	Ontario		
Region:	Richmond Hill		
Weather Station Location:	Open flat terrain, grass		
Anemometer height (m):	10		
Local Shielding			
Building Site:	Suburban, forest		
Walls:	Heavy		
Flue:	Heavy		
Highest Ceiling Height (m):	6.40		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	1182.7		
Air Leakage/Ventilation			
Air Tightness Type:	Energy Star Detached (2.5 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1104.1 cm ²	
	2.50	ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust	
	45.0	45.0	
Flue Size			
Flue #:	#1	#2	#3
Diameter (mm):	0	0	0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.219		
Cooling Air Leakage Rate (ACH/H):	0.068		

TYPE: 4504
LO# 90464

OPT. GROUND & OPT 2ND



BASEMENT PLAN EL. 'A' & 'B'
FOR OPT. GROUND FLOOR PLAN COND.




BASEMENT PLAN EL. 'C'

CSA-F280-12
SB-12 PERFORMANCE

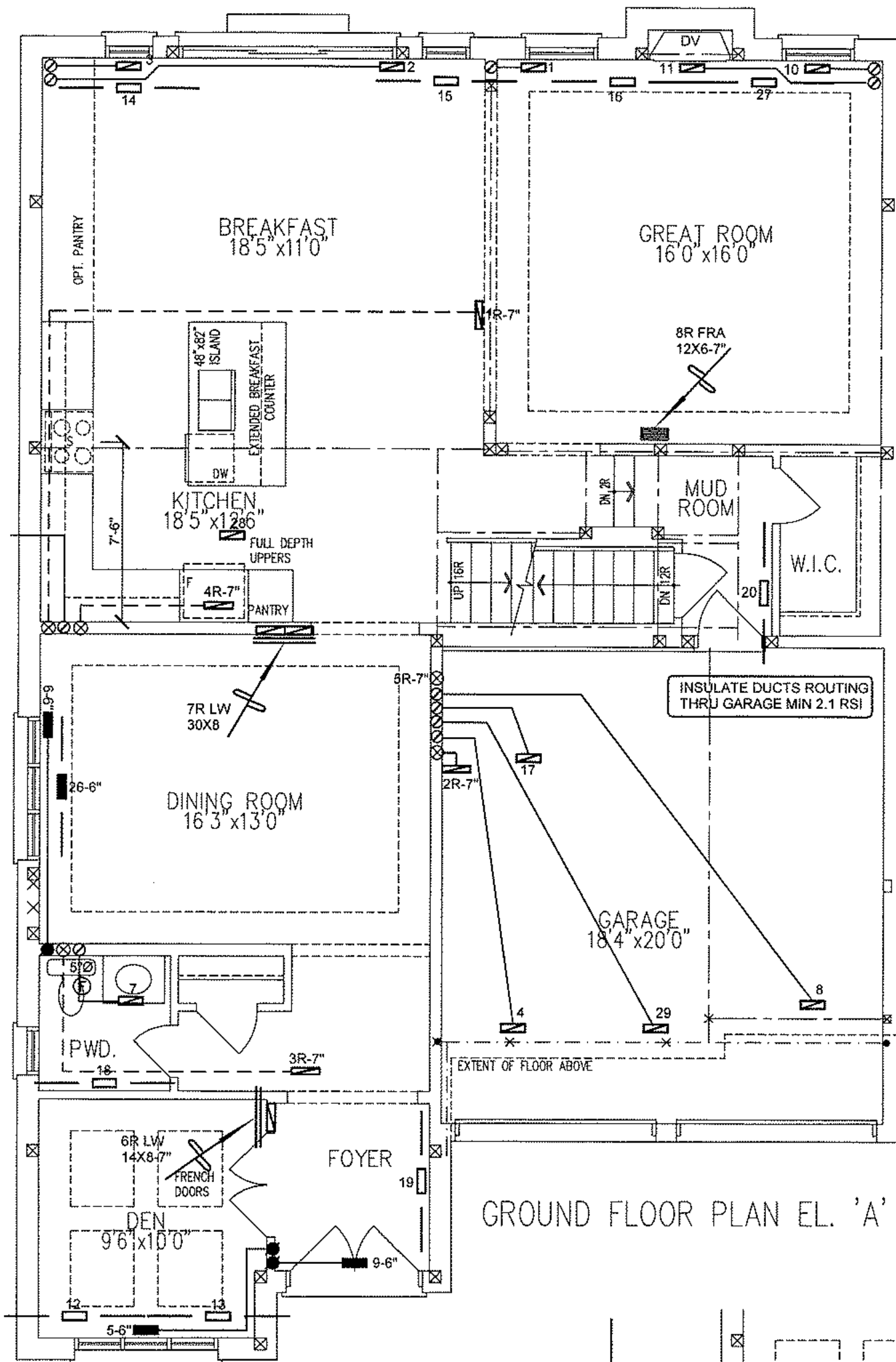
1 MICHAEL O'DRISCOLL HAS REVIEWED AND TAKEN RESPONSIBILITY FOR THE DESIGN WORK AND AMOUNTED UNDER DIVISION C, 12.5 OF THE BUILDING CODE.
Michael O'Driscoll
Michael O'Driscoll, Lic# 19562
HVAC DESIGNS LTD.

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

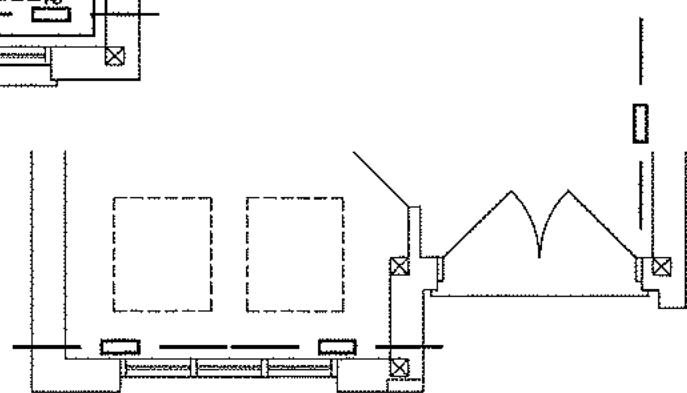
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD. AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS 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 ROYAL PINE HOMES		<div><p>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</p></div>	HEAT LOSS 51199 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title BASEMENT HEATING LAYOUT	
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			MAKE	CARRIER	3RD FLOOR					
			MODEL	59TN6A-060-14V	2ND FLOOR	14	5	4		
			INPUT	60 MBTU/H	1ST FLOOR	10	3	2		
			OUTPUT	58 MBTU/H	BASEMENT	5	1	0		
OPT. GROUND & OPT 2ND 4504 3223 sqft		COOLING	3.5 TONS	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				Date	APR/2021	
		FAN SPEED	1370 cfm @ 0.6" w.c.					Scale	3/16" = 1'-0"	
								BCIN# 19669		LO#

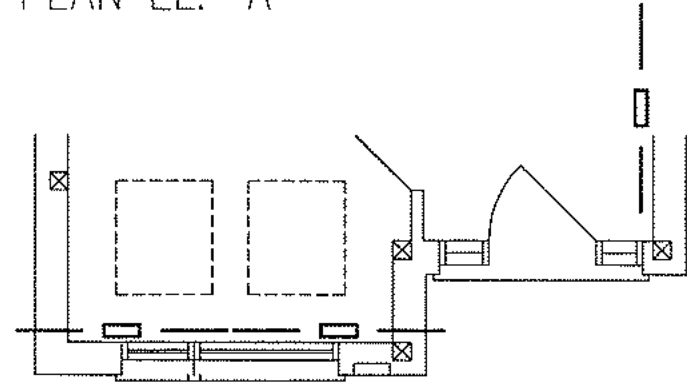
ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5" UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A



GROUND FLOOR PLAN EL. 'A'



GROUND FLOOR PLAN EL. 'B'



GROUND FLOOR PLAN EL. 'C'

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, B.Tech 1969
HVAC DESIGNS LTD.

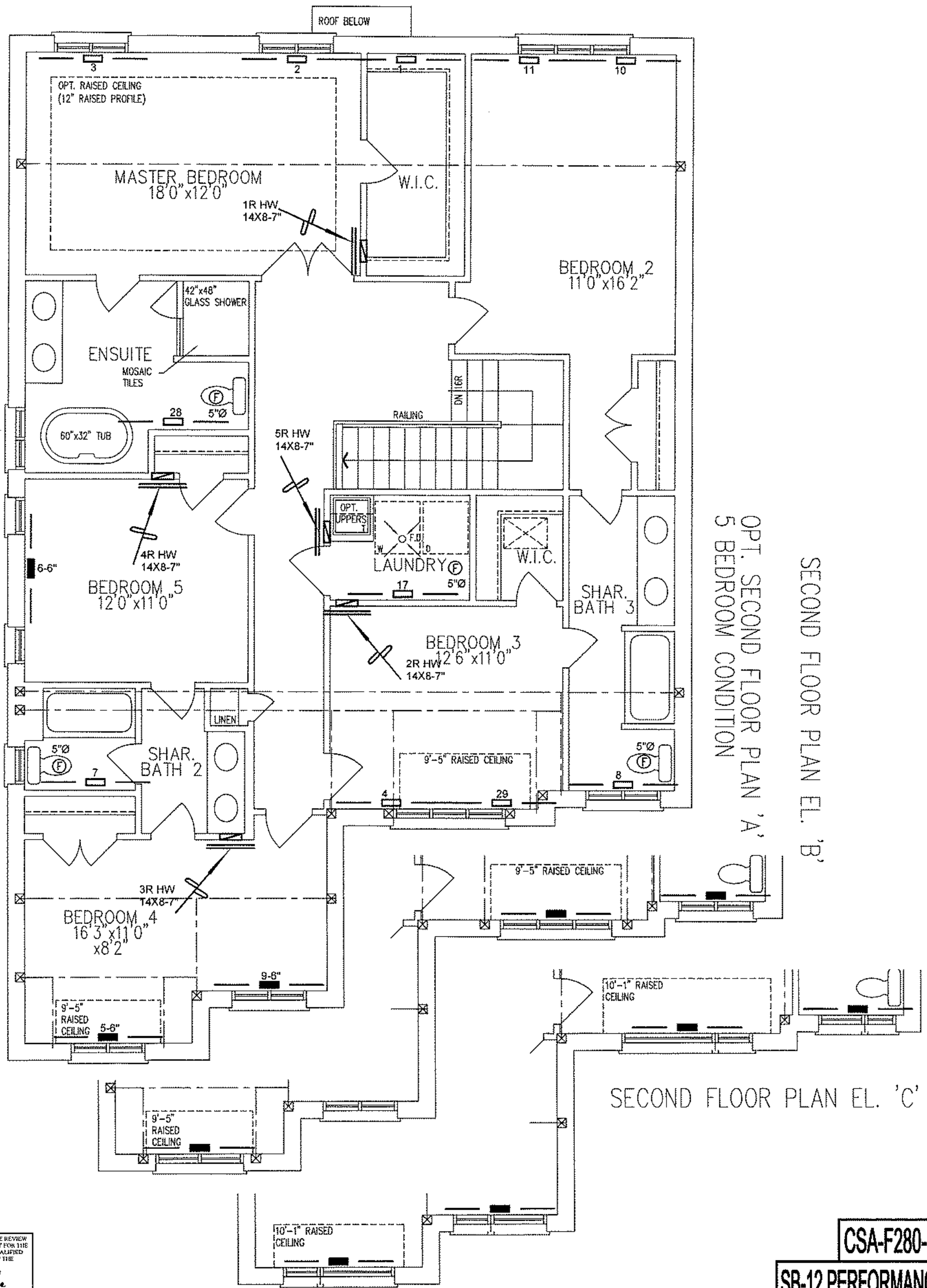
CSA-F280-12

SB-12 PERFORMANCE

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
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		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 ROYAL PINE HOMES		 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.	<div>CITY OF RICHMOND HILL BUILDING DIVISION 08/12/2021 RECEIVED Per: _____</div>	Sheet Title FIRST FLOOR HEATING LAYOUT		
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO					Date APR/2021	Scale 3/16" = 1'-0"	
OPT. GROUND & OPT 2ND 4504 3223 sqft				BCIN# 19669		LO# 90464	



I MICHAEL O'ROURKE HAVE REVIEWED 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
SB-12 PERFORMANCE

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
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		8" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER
						REVISIONS	
						No.	Description
							Date

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
ROYAL PINE HOMES

Project Name
**CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO**

**OPT. GROUND & OPT 2ND
4504 3223 sqft**

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@hvacdsgns.ca
Web: www.hvacdsgns.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.

**CITY OF RICHMOND HILL
BUILDING DIVISION**

08/12/2021

RECEIVED

Per: _____

Sheet Title
**SECOND FLOOR
HEATING
LAYOUT**

Date
APR/2021

Scale
3/16" = 1'-0"

BCIN# 19669

LO# 90464

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information			
Building number, street name		Unit no.	Lot/con.
Municipality	Postal code	Plan number/ other description	
RICHMOND HILL			
B. Individual who reviews and takes responsibility for design activities			
Name		Firm	
MICHAEL O'ROURKE		HVAC DESIGNS LTD.	
Street address		Unit no.	Lot/con.
375 FINLEY AVE		202	N/A
Municipality	Postal code	Province	E-mail
AJAX	L1S 2E2	ONTARIO	info@hvacdsgns.ca
Telephone number	Fax number	Cell number	
(905) 619-2300	(905) 619-2375	()	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]			
<input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings			
<input checked="" type="checkbox"/> HVAC – House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection			
<input type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> On-site Sewage Systems			
Description of designer's work		Model: 4504	
HEAT LOSS / GAIN CALCULATIONS		OPT. GROUND & OPT 2ND	
DUCT SIZING		Project: CENTREFIELD (WEST GORMLEY)	
RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY			
RESIDENTIAL SYSTEM DESIGN per CSA-F280-12			
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u>		declare that (choose one as appropriate):	
(print name)			
<input type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.			
Individual BCIN: _____ Firm BCIN: _____			
<input checked="" type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code.			
Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>			
<input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.			
April 23, 2021		<i>Michael O'Rourke</i>	
Date		Signature of Designer	

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Application for a Permit Construct or Demolish – Effective January 1, 2015

SITE NAME: CENTREFIELD (WEST GORMLEY)										DATE: APR-21		HEAT LOSS AT °F: 78		CSA-P260-12	
BUILDER: ROYAL PINE HOMES										LO# 80464		HEAT GAIN AT °F: 13		SB-12 PERFORMANCE	
TYPE: 4504										OPT. GROUND & OPT 2ND		WINTER NATURAL AIR CHANGE RATE 0.233		SUMMER NATURAL AIR CHANGE RATE 0.073	
										GFA: 3223		ENS-4/5		BED-5	
										BED-4		ENS-4/5		BED-5	
										BED-3		ENS-4/5		BED-5	
										BED-2		ENS-4/5		BED-5	
										BED-1		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
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										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
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										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	
										BED-0		ENS-4/5		BED-5	

SITE NAME: CENTREFIELD (WEST GORMLEY)
BUILDER: ROYAL PINE HOMES

OPT. GROUND & OPT 2ND

TYPE: 4504

DATE: Apr-21

GFA: 3223

LO# 90464

HEATING CFM 1370 COOLING CFM 1370
TOTAL HEAT LOSS 51,976 TOTAL HEAT GAIN 42,134
AIR FLOW RATE CFM 26.36 AIR FLOW RATE CFM 32.52

**CARRIER

AFUE = 97 %

INPUT (BTU/H) = 60,000

OUTPUT (BTU/H) = 58,000

DESIGN CFM = 1370
CFM @ 6" E.S.P.

FAN SPEED

LOW 820

MEDIUM 0

HIGH 1370

TEMPERATURE RISE 39 °F

ROOM COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	14	10	5
R/A	0	0	5	3	1

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

All S/A fans 570 unless noted otherwise on layout.

ROOM #	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	WIC	MBR	MBR	BED-3	BED-4	BED-5	ENS-4/5	ENS-3	BED-4	BED-2	BED-2	LIV	LIV	KT/IGT	KT/IGT	KT/IGT	LALIN	WIR	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	0.34	1.35	1.35	1.37	1.92	1.23	0.56	2.22	1.92	1.39	1.39	1.23	1.23	2.24	2.24	2.24	0.32	0.58	2.57	1.64	3.18	3.18	3.18	3.18
CFM PER RUN HEAT	9	36	36	36	51	32	15	58	51	37	37	32	32	59	59	59	8	15	68	43	84	84	84	84
RM GAIN MBH	0.10	1.89	1.99	2.28	2.66	1.96	0.35	1.61	2.66	1.60	1.60	1.67	1.67	2.35	2.35	2.35	1.05	0.36	1.73	0.28	0.44	0.44	0.44	0.44
CFM PER RUN COOLING	5	65	65	74	86	64	11	52	86	52	52	54	54	76	76	76	34	12	56	9	14	14	14	14
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
EQUIVALENT LENGTH	170	180	190	180	180	170	170	200	150	220	140	190	170	130	120	120	190	120	160	160	90	100	130	110
TOTAL EFFECTIVE LENGTH	223	225	252	221	241	229	219	246	207	284	201	244	218	174	155	204	221	163	195	201	126	146	151	150
ADJUSTED PRESSURE	0.08	0.08	0.07	0.08	0.07	0.08	0.08	0.07	0.08	0.06	0.08	0.07	0.08	0.1	0.11	0.08	0.08	0.11	0.09	0.09	0.13	0.11	0.11	0.11
ROUND DUCT SIZE	4	6	6	5	6	6	4	5	6	5	5	5	5	5	6	6	4	4	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	103	184	184	264	264	163	172	426	260	272	272	235	235	301	301	301	301	172	499	493	428	428	428	428
COOLING VELOCITY (ft/min)	34	331	331	543	438	326	126	382	438	382	382	386	386	398	388	388	390	138	411	103	71	71	71	71
OUTLET GRILL SIZE	3X10	4X10	4X10	3X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	C	C	B	A	B	B	E	A	C	D	A	A	C	C	C	B	B	A	D	D	D	D	B

CITY OF RICHMOND HILL
BUILDING DIVISION
08/12/2021
RECEIVED
Per: _____

ROOM #	25	26	27	28	29
ROOM NAME	BAS	DIN	KT/IGT	ENS	BED-3
RM LOSS MBH	3.18	2.18	2.18	0.96	1.37
CFM PER RUN HEAT	84	58	59	26	36
RM GAIN MBH	0.44	2.03	2.35	0.68	2.28
CFM PER RUN COOLING	14	66	76	22	74
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.17
EQUIVALENT LENGTH	39	33	43	43	40
TOTAL EFFECTIVE LENGTH	189	173	213	223	220
ADJUSTED PRESSURE	0.09	0.1	0.08	0.08	0.08
ROUND DUCT SIZE	6	6	6	4	5
HEATING VELOCITY (ft/min)	428	296	301	298	264
COOLING VELOCITY (ft/min)	71	337	368	252	543
OUTLET GRILL SIZE	4X10	4X10	4X10	3X10	3X10
TRUNK	A	B	C	D	B

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	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	318	0.07	9.4	12	18	477	TRUNK G	0	0.00	0	0	0	TRUNK Q	0	0.05	0	0	0
TRUNK B	502	0.07	12	18	18	602	TRUNK H	0	0.00	0	0	0	TRUNK P	0	0.05	0	0	0
TRUNK C	354	0.06	10.2	14	14	455	TRUNK I	0	0.00	0	0	0	TRUNK R	0	0.05	0	0	0
TRUNK D	712	0.06	13.3	20	20	641	TRUNK J	0	0.00	0	0	0	TRUNK S	0	0.05	0	0	0
TRUNK E	1372	0.06	17	26	26	760	TRUNK K	0	0.00	0	0	0	TRUNK T	0	0.05	0	0	0
TRUNK F	0	0.00	0	0	0	0	TRUNK L	0	0.00	0	0	0	TRUNK U	0	0.05	0	0	0
RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
AIR VOLUME	115	115	105	105	135	125	370	125	0	0	0	0	0	0	0	0	0	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	0.15
ACTUAL DUCT LGH	53	47	73	45	42	48	23	57	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	215	175	255	255	135	215	260	175	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LENGTH	288	222	328	300	177	263	283	232	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
ROUND DUCT SIZE	6.7	6.5	6.8	6.8	6.6	6.9	10.9	6.9	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	14	14	14	14	14	14	30	14	0	0	0	0	0	0	0	0	0	0

TYPE: 4504
SITE NAME: CENTREFIELD (WEST GORMLEY)

LO # 90464
OPT. GROUND & OPT 2ND

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES		9.32.3.1(1)
a) <input checked="" type="checkbox"/>	Direct vent (sealed combustion) only	
b) <input type="checkbox"/>	Positive venting induced draft (except fireplaces)	
c) <input type="checkbox"/>	Natural draft, B-vent or induced draft gas fireplace	
d) <input type="checkbox"/>	Solid Fuel (including fireplaces)	
e) <input type="checkbox"/>	No Combustion Appliances	

HEATING SYSTEM	
<input checked="" type="checkbox"/>	Forced Air
<input type="checkbox"/>	Non Forced Air
<input type="checkbox"/>	Electric Space Heat

HOUSE TYPE		9.32.1(2)
<input checked="" type="checkbox"/>	I Type a) or b) appliance only, no solid fuel	
<input type="checkbox"/>	II Type I except with solid fuel (including fireplaces)	
<input type="checkbox"/>	III Any Type c) appliance	
<input type="checkbox"/>	IV Type i, or II with electric space heat	
<input type="checkbox"/>	Other: Type i, II or IV no forced air	

SYSTEM DESIGN OPTIONS		O.N.H.W.P.
<input type="checkbox"/>	1 Exhaust only/Forced Air System	
<input type="checkbox"/>	2 HRV with Ducting/Forced Air System	
<input checked="" type="checkbox"/>	3 HRV Simplified/connected to forced air system	
<input type="checkbox"/>	4 HRV with Ducting/non forced air system	
<input type="checkbox"/>	Part 6 Design	

TOTAL VENTILATION CAPACITY		9.32.3.3(1)
Basement + Master Bedroom	2 @ 21.2 cfm	42.4 cfm
Other Bedrooms	4 @ 10.6 cfm	42.4 cfm
Kitchen & Bathrooms	5 @ 10.6 cfm	53 cfm
Other Rooms	5 @ 10.6 cfm	53.0 cfm
Table 9.32.3.A	TOTAL	190.8 cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED		9.32.3.4.(1)
1 Bedroom	31.6	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	190.8	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	95.4	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANE 65H	Location: BSM7
95.4 cfm	<input checked="" type="checkbox"/> HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION	
CFM	$\Delta T \cdot F$
95.4 CFM	X 78 F
Factor	1.08
% LOSS	0.25

SUPPLEMENTAL FANS		BY INSTALLING CONTRACTOR	
Location	Model	cfm	HVI
ENS	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>
ENS-4/5	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>
ENS 3	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>
W/R	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANE 65H		
155 cfm high	64 cfm low	
75 % Sensible Efficiency	<input checked="" type="checkbox"/> HVI Approved	
@ 32 deg F (0 deg C)		

LOCATION OF INSTALLATION	
Lot:	Concession
Township	Plan:
Address	
Roll #	Building Permit #

BUILDER:		ROYAL PINE 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:	April-21

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																									
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																									
LOB: 90464		Model: 4504		Builder: ROYAL PINE HOMES		Date: 4/23/2021																																																			
Volume Calculation				Air Change & Delta T Data																																																					
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<p align="center">5.2.3.1 Heat Loss due to Air Leakage</p>																																																									
$HL_{airb} = LR_{airb} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$																																																									
0.233	x	365.31	x	43 °C	x	1.2	=	4411 W																																																	
							=	15051 Btu/h																																																	
<p align="center">5.2.3.2 Heat Loss due to Mechanical Ventilation</p>																																																									
$HL_{airb} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																									
95 CFM	x	78 °F	x	1.08	x	0.25	=	2004 Btu/h																																																	
<p align="center">5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)</p>																																																									
$HL_{air} = Level Factor \times HL_{airbv} \times ((HL_{agor} + HL_{bgcr}) + (HL_{agclevel} + HL_{bgclevel}))$																																																									
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5	0		0	0.000																																																					
<p>*HL_{airbv} = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HL_{air} = 0</p>																																																									

CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4504	OPT. GROUND & OPT 2ND	BUILDER: ROYAL PINE HOMES
SFQT: 3223	LO# 90464	SITE: CENTREFIELD (WEST GORMLEY)

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:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	46443.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.40	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 46.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	166.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component**

Ceiling with Attic Space Minimum RSI (R)-Value
Ceiling Without Attic Space Minimum RSI (R)-Value
Exposed Floor Minimum RSI (R)-Value
Walls Above Grade Minimum RSI (R)-Value
Basement Walls Minimum RSI (R)-Value
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
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value
Windows and Sliding Glass Doors Maximum U-Value
Skylights Maximum U-Value
Space Heating Equipment Minimum AFUE
HRV Minimum Efficiency
Domestic Hot Water Heater Minimum EF

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BUILDING DIVISION****08/12/2021****RECEIVED**

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**Compliance Package
SB-12 PERFORMANCE**

Nominal	Min. Eff.
60	59.20
31	27.70
31	29.80
22+1.5	18.50
20	21.12
-	-
10	10
10	11.13
1.6	-
2.6	-
0.96	-
75%	-
TE=94%	-

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

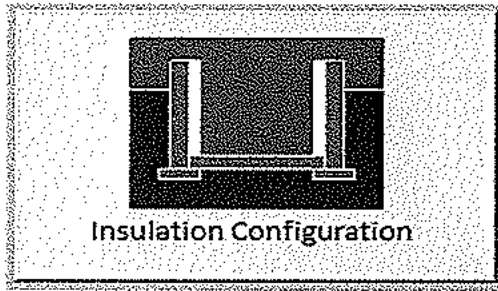
08/12/2021

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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):	14.0	 Insulation Configuration
Floor Width (m):	11.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	1.9	
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):	1635	

TYPE: 4504
LO# 90464

OPT. GROUND & OPT 2ND

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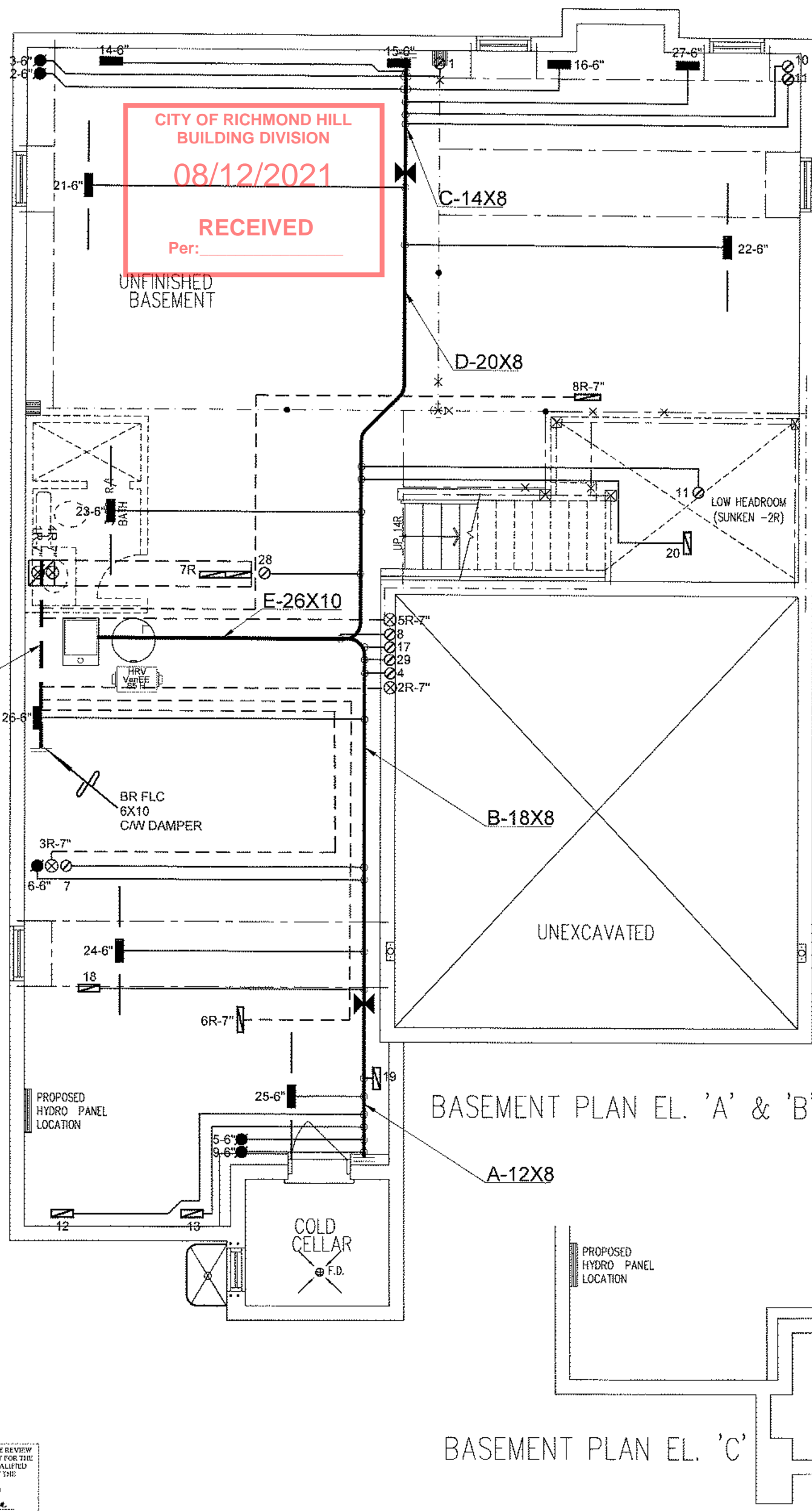
Air Infiltration Residential Load Calculator

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):	7.01		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	1315.1		
Air Leakage/Ventilation			
Air Tightness Type:	Energy Star Detached (2.5 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1227.7 cm ²	
	2.50	ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust	
	45.0	45.0	
Flue Size			
Flue #:	#1	#2	#3
Diameter (mm):	0	0	0
	#4	0	
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.233		
Cooling Air Leakage Rate (ACH/H):	0.073		

TYPE: 4504
LO# 90464

OPT. GROUND & OPT 2ND



I, MICHAEL O'Rourke, HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 32.3 OF THE BUILDING CODE.

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

BASEMENT PLAN EL. 'C'

CSA-F280-12
SB-12 PERFORMANCE

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

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Client
ROYAL PINE HOMES

Project Name
**CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO**

**OPT. GROUND & OPT 2ND
4504 3223 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.

HEAT LOSS 53980 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			
MAKE	CARRIER	3RD FLOOR			
MODEL	59TN6A-060-14V	2ND FLOOR	14	5	4
INPUT	60 MBTU/H	1ST FLOOR	10	3	2
OUTPUT	58 MBTU/H	BASEMENT	5	1	0
COOLING	3.5 TONS	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			
FAN SPEED	1370 cfm @ 0.8" w.c.				

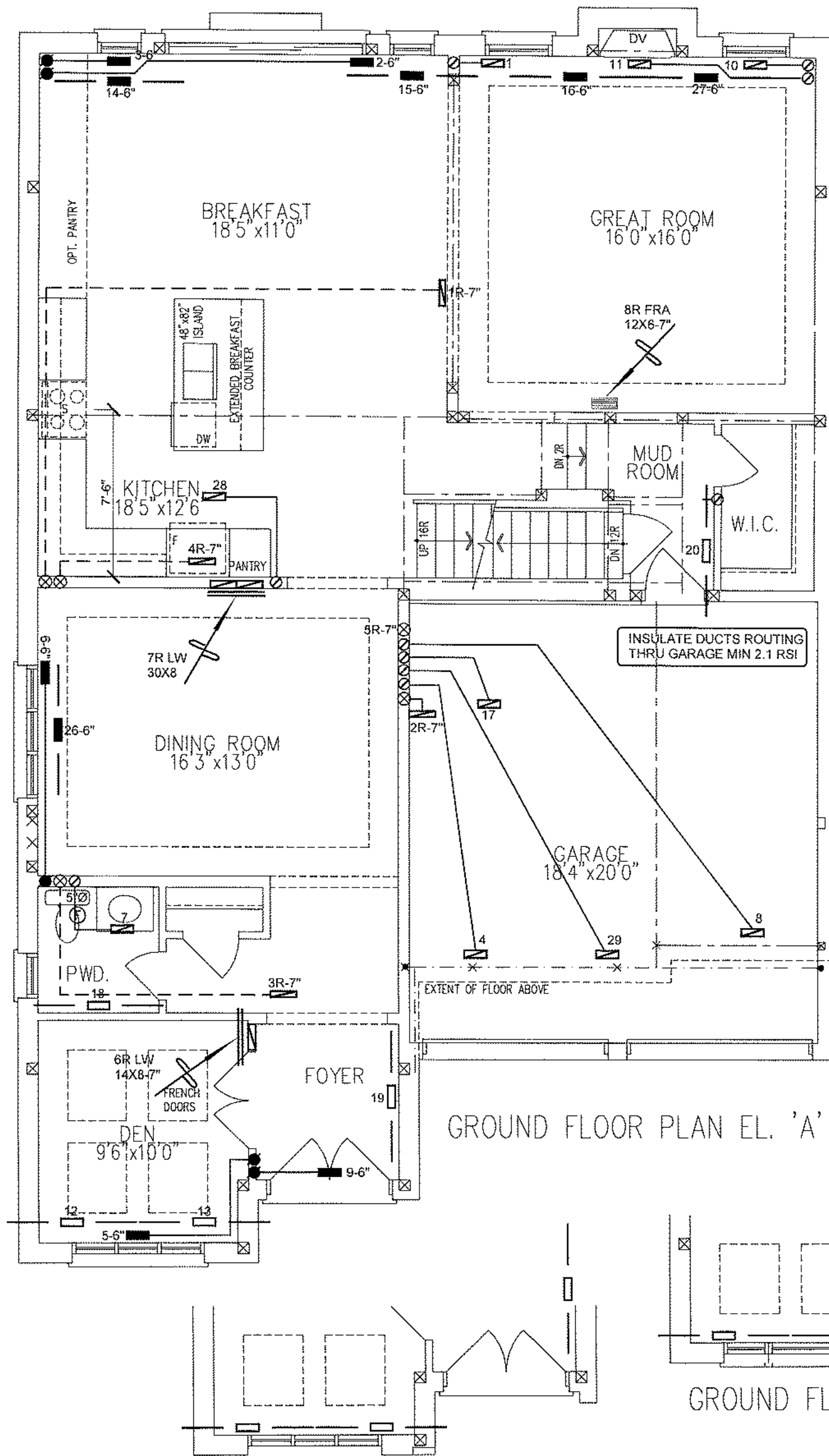
Sheet Title
BASEMENT HEATING LAYOUT

Date
APR/2021

Scale
3/16" = 1'-0"





BCIN# 19669

LO# **90464**



I MICHAEL OROURKE HAVE REVIEWED 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# 19869
RVAC DESIGNS LTD.

SYMBOL	DESCRIPTION	SYMBOL
	SUPPLY AIR GRILLE	
	SUPPLY AIR GRILLE 6" BOOT	
	SUPPLY AIR BOOT ABOVE	

ALL DRAWINGS, CALCULATIONS AND SPECIFICATION
USE OF THESE DRAWINGS AFTER ONE YEAR FROM T
USED DURING INSTALLATION OF HEATING SYSTEM.
ONTARIO BUILDING CODE.

Client

ROYAL PINE HOMES

Project Name

**CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO**

OPT. GROUND & OPT 2ND

4504 3223 sqft

GROUND FLOOR PLAN EL. 'B'

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
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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.

**CITY OF RICHMOND HILL
BUILDING DIVISION**













08/12/2021

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Per: _____

CSA-F280-12

SB-12 PERFORMANCE

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

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.

Sheet Title

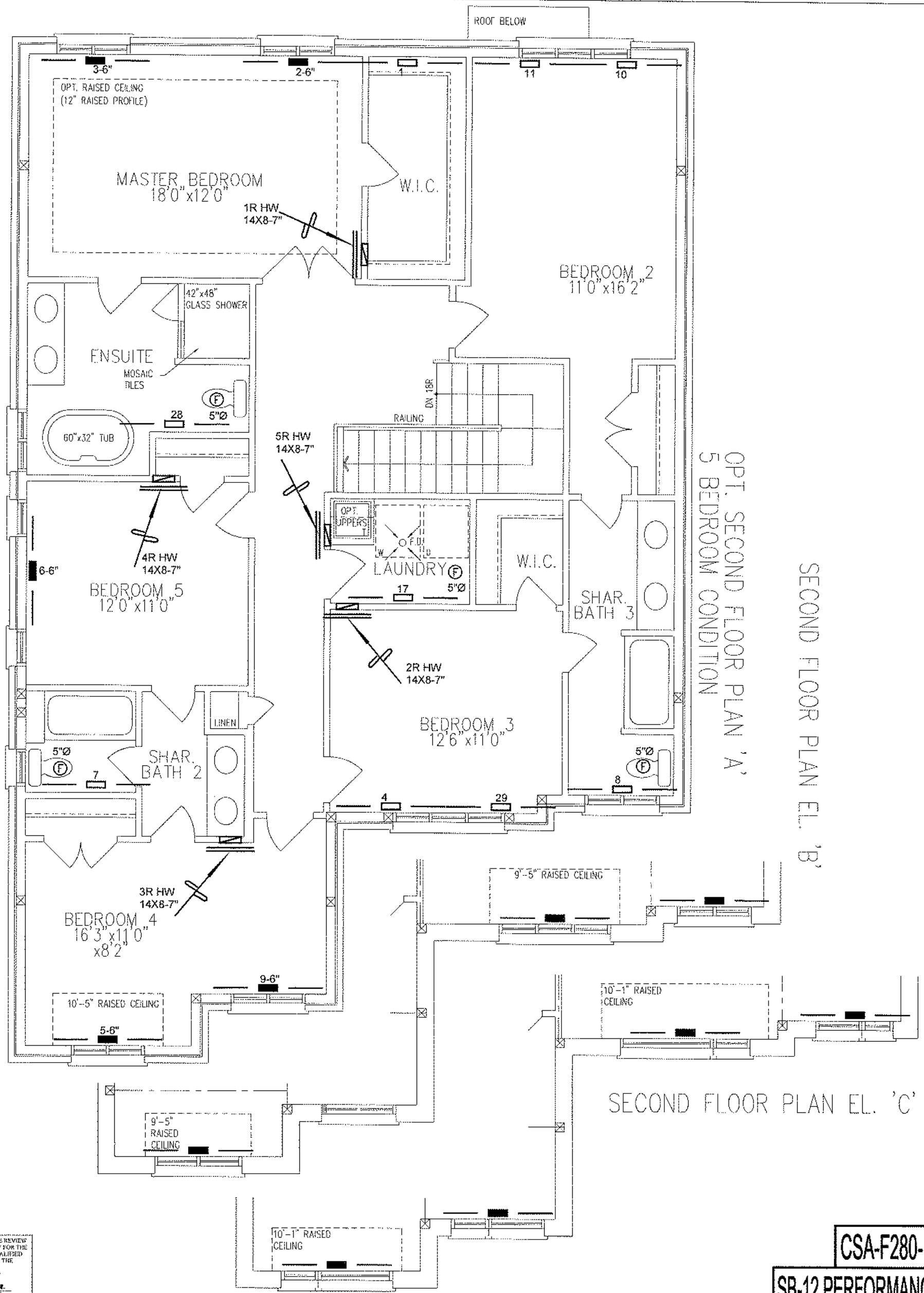
FIRST FLOOR HEATING LAYOUT

Date APR/2021

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

BCIN# 19669

LO#	90464
-----	-------



I MICHAEL O'Rourke HAVE REVIEWED 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, B.Arch 1969
HVAC DESIGNS LTD.

CSA-F280-12
SB-12 PERFORMANCE

HVAC LEGEND							
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA - FLOOR RETURN AIR GRILLE		REDUCER

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Client

ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO

OPT. GROUND & OPT 2ND
4504 3223 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@hvacdsgns.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.

CITY OF RICHMOND HILL
BUILDING DIVISION
08/12/2021
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Sheet Title

SECOND FLOOR
HEATING
LAYOUT

Date

APR/2021

Scale


3/16" = 1'-0"

BCIN# 19669

LO# 90464

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information			
Building number, street name		Unit no.	Lot/con.
Municipality RICHMOND HILL	Postal code	Plan number/ other description	
B. Individual who reviews and takes responsibility for design activities			
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.	
Street address 375 FINLEY AVE		Unit no. 202	Lot/con. N/A
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdsgns.ca
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]			
<input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings <input checked="" type="checkbox"/> HVAC – House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection <input type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> On-site Sewage Systems			
Description of designer's work HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12		Model: 4504 OPT. GROUND Project: CENTREFIELD (WEST GORMLEY)	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u> (print name)		declare that (choose one as appropriate):	
<input type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C. of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____			
<input checked="" type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C. of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>			
<input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.			
June 7, 2021 Date		 Signature of Designer	

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Application for a Permit Construct or Demolish – Effective January 1, 2015

CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

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Per: _____

SITE NAME: CENTREFIELD (WEST GORMLEY)

TYPE: 4004

OPT. GROUND

DATE: Jun-21

LO# 97512

WINTER NATURAL AIR CHANGE RATE

Q.219

HEAT LOSS AT "F"

78

HEAT GAIN AT "F"

13

CSA-F280-12

58-12 PERFORMANCE

ROOM USE	EXP. WALL	CLG. HT.	MBR	ENS	OPF. 3223	BED-2	BED-3	BED-4	BATH	ENS-2	LOSS GAIN
GRS.WALL AREA	21.8	15.0	378	208	240	240	394	136	58	72	152
GLAZING	0	0	0	0	0	0	0	0	0	0	0
NORTH	21.8	15.0	0	0	0	0	0	0	0	0	0
EAST	21.8	15.0	0	0	0	0	0	0	0	0	0
SOUTH	21.8	15.0	0	0	0	0	0	0	0	0	0
WEST	21.8	15.0	0	0	0	0	0	0	0	0	0
SKYLT.	36.8	101.2	0	0	0	0	0	0	0	0	0
DOORS	26.8	4.3	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.3	0.7	342	1428	213	856	147	320	34	65	273
NET EXPOSED WALL ABOVE OR	3.7	0.6	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	428	562	280	388	165	274	96	102	134
NO ATTIC EXPOSED CLG	2.8	1.3	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.4	0	0	280	731	120	0	0	5	13
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	2785	1884	1647	1169	3454	3184	3079	1294	466	673	219
LEVEL FACTOR / MULTIPLIER	0.20	0.19	0.20	0.19	0.20	0.19	0.20	0.19	0.20	0.20	0.19
AIR CHANGE HEAT LOSS	522	82	290	49	648	597	128	240	91	107	107
AIR CHANGE HEAT GAIN	0	0	0	0	410	0	0	0	0	88	23
DUCT LOSS	0	0	0	0	0	0	0	0	0	0	0
DUCT GAIN	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	2	460	0	0	240	0	0	1	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	727	727	0	0	727	727	727	727	727	748	328
TOTAL HT LOSS BTU/H	3307	4255	1838	1553	4512	3782	8427	1537	676	0	0
TOTAL HT GAIN x 1.3 BTU/H					6173			2176	358		

CITY OF RICHMOND HILL
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ROOM USE	EXP. WALL	CLG. HT.	DEN	DIN	KT/GT	LAUN	WVR	FOY	MUD	BAS	LOSS GAIN
GRS.WALL AREA	21.8	15.0	250	250	920	0	60	230	175	996	168
GLAZING	0	0	0	0	0	0	0	0	0	0	0
NORTH	21.8	15.0	0	0	0	0	0	0	0	0	0
EAST	21.8	15.0	0	0	0	0	0	0	0	0	0
SOUTH	21.8	15.0	0	0	0	0	0	0	0	0	0
WEST	21.8	15.0	0	0	0	0	0	0	0	0	0
SKYLT.	36.8	101.2	0	0	0	0	0	0	0	0	0
DOORS	26.8	4.3	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.2	0.7	215	883	146	0	61	183	175	4	87
NET EXPOSED WALL ABOVE OR	3.7	0.6	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	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
EXPOSED FLOOR	2.6	0.4	0	0	0	0	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	1764	1807	1644	867	8213	79	411	1875	1173	5378	982
LEVEL FACTOR / MULTIPLIER	0.30	0.29	0.30	0.29	0.30	0.29	0.30	0.30	0.30	0.29	0.29
AIR CHANGE HEAT LOSS	509	445	35	28	1863	45	119	544	341	5.58	0.75
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0	0	0	6359	41
DUCT LOSS	0	0	0	0	0	0	0	0	0	0	0
DUCT GAIN	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	240	727	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	2264	727	727	727	727	727	727	727	727	14737	727
TOTAL HT LOSS BTU/H	3399	2096	1592	8335	9358	312	530	2418	1614	5691	2275
TOTAL HT GAIN x 1.3 BTU/H						1167	361	1806	261		

TOTAL HEAT GAIN BTU/H: 41275

TONS: 3.44

LOSS DUE TO VENTILATION LOAD BTU/H: 1670

STRUCTURAL HEAT LOSS: 48002

TOTAL COMBINED HEAT LOSS BTU/H: 49972

SITE NAME: CENTREFIELD (WEST GORMLEY)
BUILDER: ROYAL PINE HOMES

TYPE: 4504
OPT. GROUND

GFA: 3223 LO# 87512

DATE: Jun-21

HEATING CFM 1370 COOLING CFM 1370
TOTAL HEAT LOSS 48,302 TOTAL HEAT GAIN 41,000
AIR FLOW RATE CFM 28.36 AIR FLOW RATE CFM 33.41

59TNGA-060-14V
FAN SPEED 60
DESIGN CFM = 1370
CFM @ .6" E.S.P.

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	12	10	5
R/A	0	0	5	3	1

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

ROOM #	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	BED-2	BED-3	BED-3	BED-4	BATH	BED-2	BED-3	MBR	ENS-2	DEN	DEN	KT/GT	KT/GT	KT/GT	LAUN	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.65	0.92	2.26	1.89	1.89	1.54	0.58	2.26	1.89	1.65	0.75	1.13	1.13	2.06	2.06	2.06	0.31	0.53	2.42	1.51	2.95	2.95	2.95	2.95
CFM PER RUN HEAT	47	26	64	54	54	44	16	64	54	47	21	32	32	58	58	58	9	15	69	43	84	84	84	84
RM GAIN MBH	2.13	0.79	3.09	2.71	2.71	2.18	0.38	3.09	2.71	2.13	0.33	1.70	1.70	2.34	2.34	2.34	1.16	0.35	1.81	0.28	0.46	0.46	0.46	0.46
CFM PER RUN COOLING	71	26	103	91	91	73	12	103	91	71	11	57	57	78	78	78	39	12	60	9	15	15	15	15
ADJUSTED PRESSURE	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16
EQUIVALENT LENGTH	140	150	160	120	160	170	170	140	150	140	170	170	170	130	120	140	130	120	160	190	90	120	120	110
TOTAL EFFECTIVE LENGTH	167	219	227	174	241	246	236	212	226	210	236	241	235	173	150	178	185	179	241	120	136	147	158	158
ADJUSTED PRESSURE	0.09	0.08	0.09	0.07	0.07	0.07	0.07	0.08	0.07	0.08	0.07	0.07	0.07	0.11	0.11	0.11	0.09	0.1	0.08	0.07	0.14	0.12	0.11	0.1
ROUND DUCT SIZE	6	4	6	6	6	6	4	6	6	6	4	5	5	5	5	5	4	4	6	5	6	6	6	6
HEATING VELOCITY (ft/min)	240	298	298	275	275	326	184	326	275	240	241	235	235	426	426	426	103	172	352	316	428	428	428	428
COOLING VELOCITY (ft/min)	362	298	298	525	464	372	138	525	464	362	126	419	419	573	573	573	447	138	306	66	76	76	76	76
OUTLET GRILL SIZE	4X10	3X10	4X10	4X10	4X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10

ROOM #	25	26	27
ROOM NAME	BAS	DIN	KT/GT
RM LOSS MBH	2.95	1.99	2.08
CFM PER RUN HEAT	84	56	58
RM GAIN MBH	2.10	2.34	2.34
CFM PER RUN COOLING	15	70	78
ADJUSTED PRESSURE	0.16	0.17	0.17
EQUIVALENT LENGTH	57	49	44
TOTAL EFFECTIVE LENGTH	150	140	150
ADJUSTED PRESSURE	0.08	0.09	0.09
ROUND DUCT SIZE	6	6	5
HEATING VELOCITY (ft/min)	428	286	426
COOLING VELOCITY (ft/min)	76	357	573
OUTLET GRILL SIZE	4X10	4X10	3X10

TRUNK	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	0.07	9.5	12	488	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK B	0.07	11.5	16	608	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK C	0.07	13.5	22	675	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK D	0.09	8.4	10	502	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK E	0.08	11.2	14	702	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK F	0.07	16.3	26	759	0	0.00	0	0	0	0	0.00	0	0	0

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
AIR VOLUME	115	115	115	115	130	130	305	140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0.15	0.15	0.15	0.15	0.15	0.15	0.15
EQUIVALENT LENGTH	95	65	98	88	60	67	47	18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TOTAL EFFECTIVE LENGTH	195	245	215	235	205	190	245	145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED PRESSURE	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
ROUND DUCT SIZE	7	7	7	7	7	7	10.1	6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	6	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
INLET GRILL SIZE	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14

CITY OF RICHMOND HILL
BUILDING DIVISION
08/12/2021
RECEIVED
Per: _____

TYPE: 4504
SITE NAME: CENTREFIELD (WEST GORMLEY)
LO # 87512
OPT. GROUND

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	5	@ 10.6 cfm	53.0	cfm
Table 9.32.3.A.	TOTAL			180.2 cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED 9.32.3.4.(1)

1 Bedroom	31.8	cfm
2 Bedroom	47.7	cfm
3 Bedroom	83.6	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	180.2	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	100.7	cfm

PRINCIPAL EXHAUST FAN CAPACITY
Model: VANE 65H 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	Sones
ENS	BY INSTALLING CONTRACTOR	50	✓	3.5
BATH	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-2	BY INSTALLING CONTRACTOR	50	✓	3.5
W/R	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.
Model: VANE 65H
155 cfm high 64 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: ROYAL PINE HOMES
Name:
Address:
City:
Telephone #:

INSTALLING CONTRACTOR
Name:
Address:
City:
Telephone #:

DESIGNER CERTIFICATION
I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.
Name: HVAC Designs Ltd.
Signature: *Michael O'Rourke*
HRAI #: 001820
Date: June-21

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																															
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																															
LO#: 87512	Model: 4504	Builder: ROYAL PINE HOMES	Date: 6/7/2021																																																																												
Volume Calculation		Air Change & Delta T Data																																																																													
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6.2.6 Sensible Gain due to Air Leakage																																																																															
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			652 Btu/h																																																																												
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$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																																															
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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<p>*HL_{airbv} = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HL_{airrv} = 0</p>																																																																															

CITY OF RICHMOND HILL
BUILDING DIVISION
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4504	OPT. GROUND	BUILDER: ROYAL PINE HOMES
SFQT: 3223	LO# 87512	SITE: CENTREFIELD (WEST GORMLEY)

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:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	41767.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.40	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 46.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	166.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component**

Ceiling with Attic Space Minimum RSI (R)-Value
Ceiling Without Attic Space Minimum RSI (R)-Value
Exposed Floor Minimum RSI (R)-Value
Walls Above Grade Minimum RSI (R)-Value
Basement Walls Minimum RSI (R)-Value
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
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value
Windows and Sliding Glass Doors Maximum U-Value
Skylights Maximum U-Value
Space Heating Equipment Minimum AFUE
HRV Minimum Efficiency
Domestic Hot Water Heater Minimum EF

**CITY OF RICHMOND HILL
BUILDING DIVISION****08/12/2021****RECEIVED**

Per: _____

**Compliance Package
SB-12 PERFORMANCE****Nominal Min. Eff.**

60	59.20
31	27.70
31	29.80
22+1.5	18.50
20	21.12
-	-
10	10
10	11.13
1.6	-
2.6	-
0.96	-
75%	-
TE=94%	-

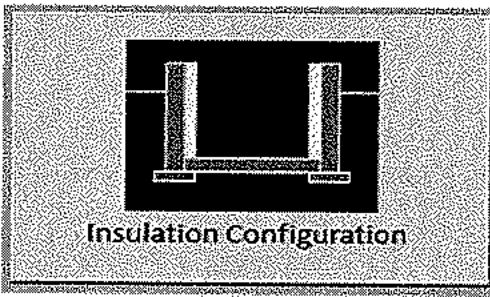
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

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):	14.0	 Insulation Configuration
Floor Width (m):	11.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.9	
Door Area (m ²):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	<div>CITY OF RICHMOND HILL BUILDING DIVISION 08/12/2021 RECEIVED Per: _____</div>
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	1638	

TYPE: 4504
LO# 87512

OPT. GROUND

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):	6.40		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	1182.7		
Air Leakage/Ventilation			
Air Tightness Type:	Energy Star Detached (2.5 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1104.1 cm ²	
	2.50	ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust	
	37.5	37.5	
Flue Size			
Flue #:	#1	#2	#3
Diameter (mm):	0	0	0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.219		
Cooling Air Leakage Rate (ACH/H):	0.068		

TYPE: 4504
LO# 87512

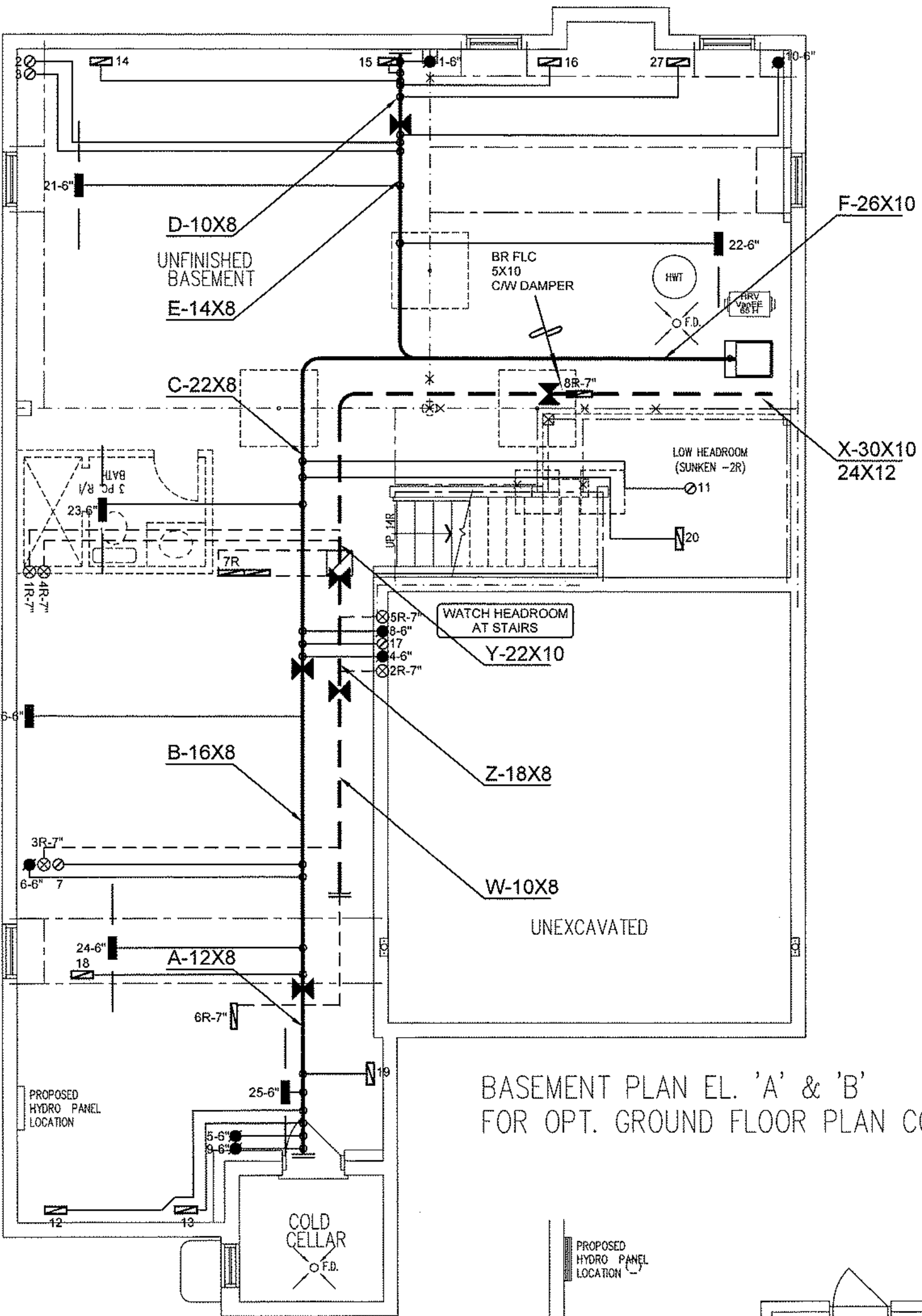
OPT. GROUND

CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

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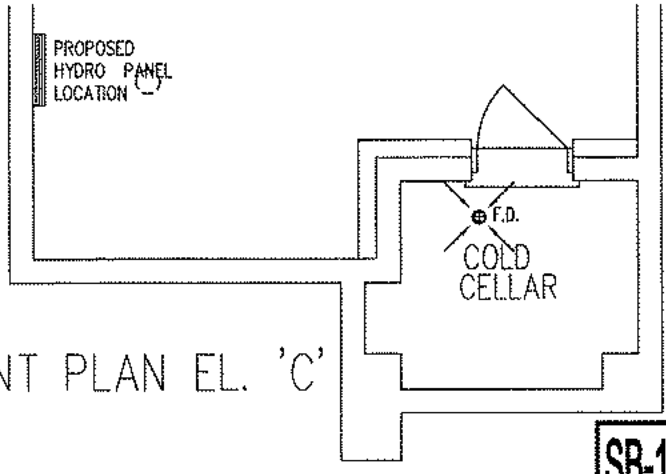
Per: _____



BASEMENT PLAN EL. 'A' & 'B'
FOR OPT. GROUND FLOOR PLAN COND.













BASEMENT PLAN EL. 'C'

CITY OF RICHMOND HILL
BUILDING DIVISION
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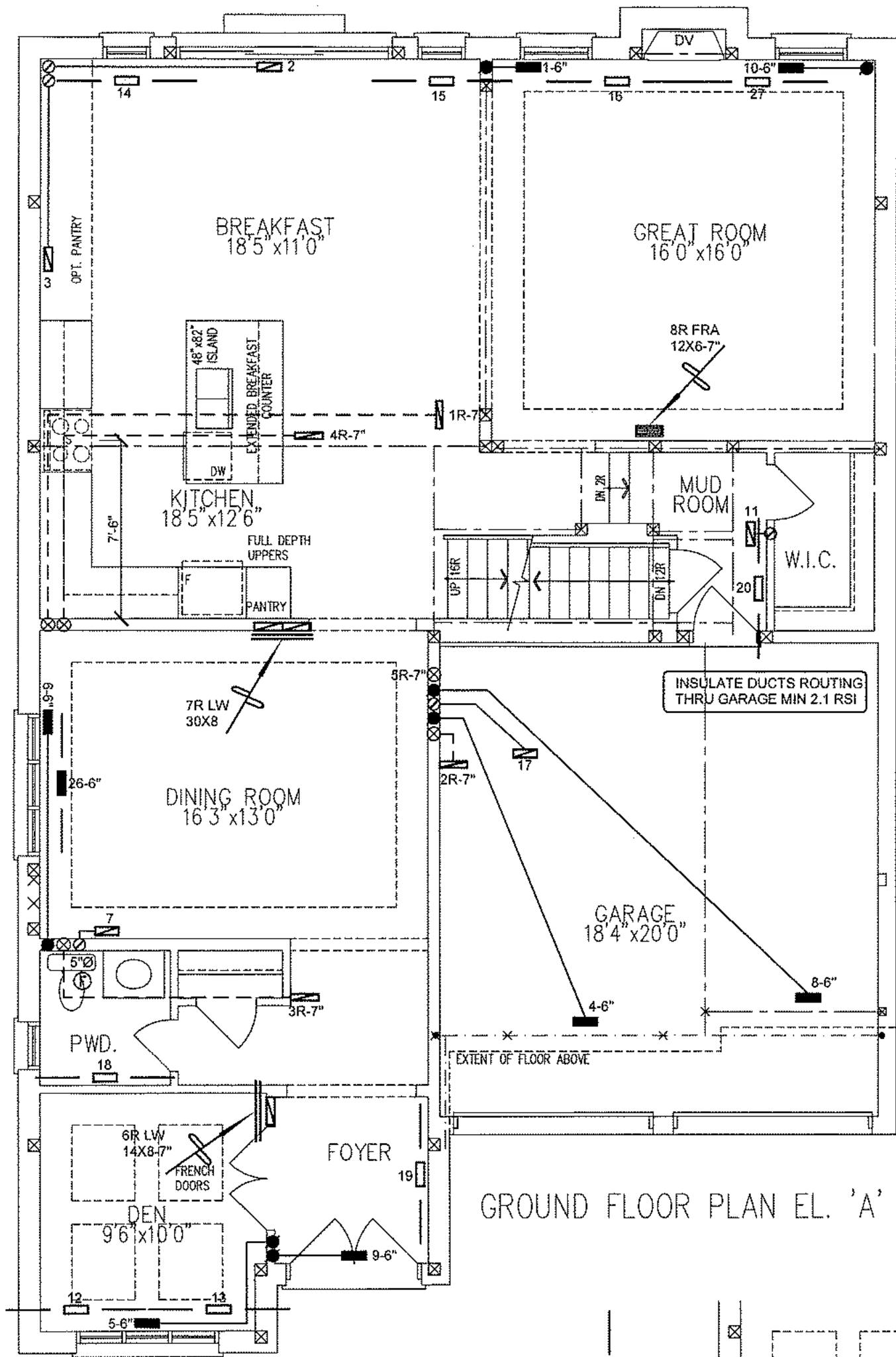
CSA-F280-12
SB-12 PERFORMANCE

I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION 6, 3.2.5 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

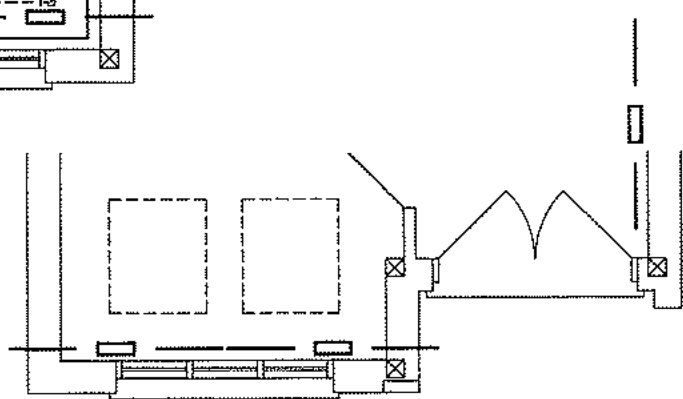
HVAC LEGEND								3.	REVISED AS PER CAD	JUNE/2021
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		8" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

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.

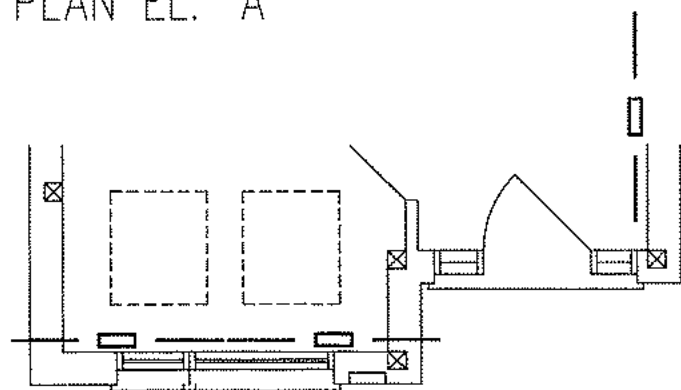
Client ROYAL PINE HOMES		<div>HVAC DESIGNS LTD.</div> <div>375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services</div>	HEAT LOSS 49972 BTU/H		# OF RUNS S/A R/A FANS			Sheet Title BASEMENT HEATING LAYOUT
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			UNIT DATA		3RD FLOOR			
			MAKE CARRIER		2ND FLOOR 12 5 5			
			MODEL 59TN6A-060-14V		1ST FLOOR 10 3 2			
			INPUT 60 MBTU/H		BASEMENT 5 1 0			
OPT. GROUND 4504		OUTPUT 58 MBTU/H		ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A			Date SEPT/2020	
		COOLING 3.5 TONS					Scale 3/16" = 1'-0"	
		FAN SPEED 1370 cfm @ 0.6" w.c.					BCIN# 19669	
							LO# 87512	
3223 sqft		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.						



GROUND FLOOR PLAN EL. 'A'



GROUND FLOOR PLAN EL. 'B'



GROUND FLOOR PLAN EL. 'C'

1 MICHAEL O'BROUKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

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

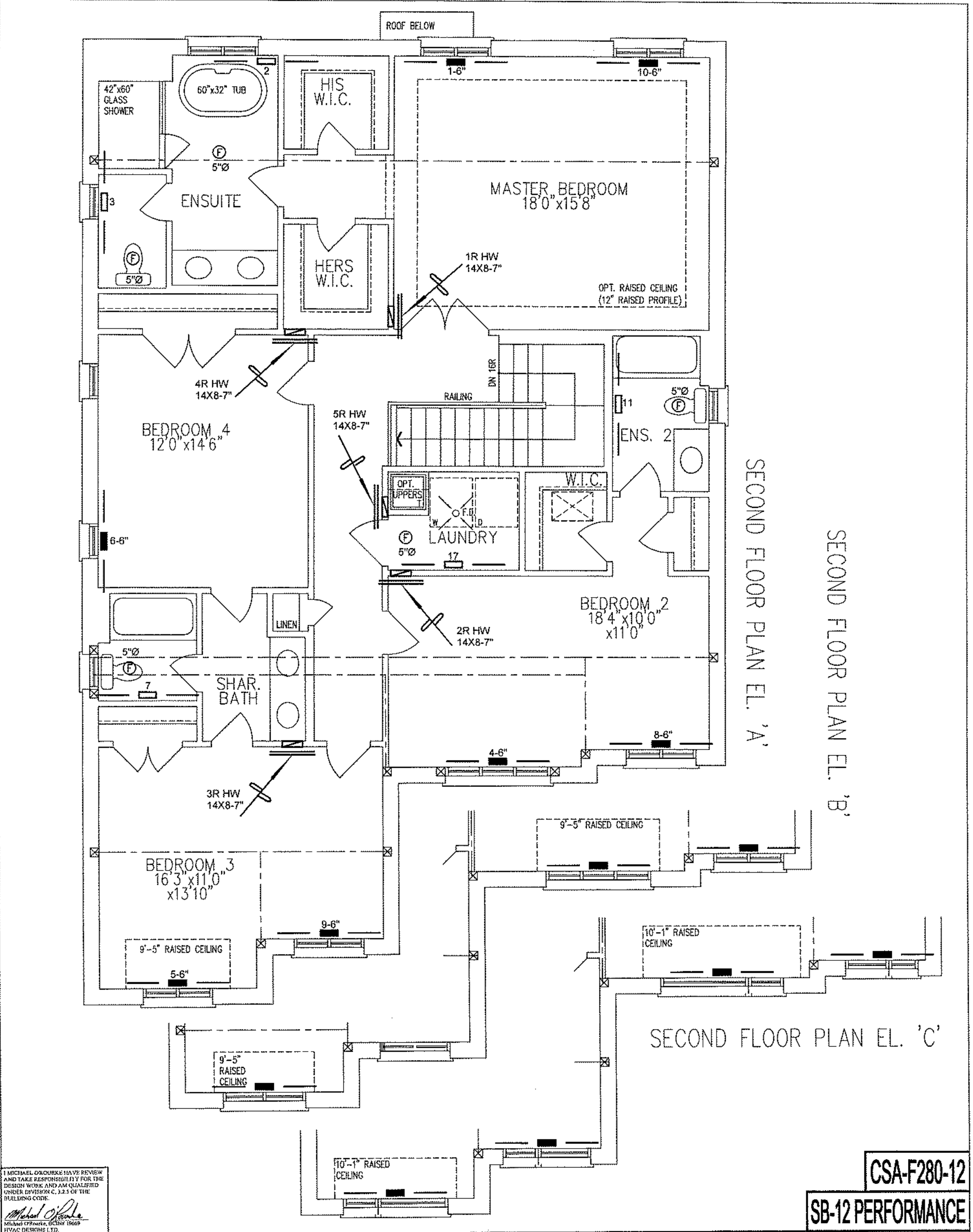
CSA-F280-12

SB-12 PERFORMANCE

HVAC LEGEND						3.	REVISED AS PER CAD	JUNE/2021
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. REVISED AS PER ARCHITECTURALS APR/2021
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	1. REVISED TO PERFORMANCE SEPT/2020
	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 ROYAL PINE HOMES		 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	<div>CITY OF RICHMOND HILL BUILDING DIVISION</div> <div>08/12/2021</div> <div>RECEIVED</div> <div>Per: _____</div>	Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO				Date SEPT/2020	Scale 3/16" = 1'-0"
OPT. GROUND 4504		BCIN# 19669		LO#	87512
3223 sqft		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.			



I MICHAEL D'AMICO HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.3 OF THE BUILDING CODE.

CSA-F280-12

SB-12 PERFORMANCE

HVAC LEGEND								3.	REVISED AS PER CAD	JUNE/2021
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
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Client

ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO

OPT. GROUND
4504

3223 sqft

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@hvacdsgns.ca
Web: www.hvacdsgns.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.

CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

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Per: _____

Sheet Title

SECOND FLOOR
HEATING
LAYOUT

Date

SEPT/2020

Scale

3/16" = 1'-0"

BCIN# 19669

LO#


87512

**CITY OF RICHMOND HILL
BUILDING DIVISION**

08/12/2021

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information			
Building number, street name		Unit no.	Lot/con.
Municipality RICHMOND HILL	Postal code	Plan number/ other description	
B. Individual who reviews and takes responsibility for design activities			
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.	
Street address 375 FINLEY AVE		Unit no. 202	Lot/con. N/A
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdsgns.ca
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]			
<div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings </div> <div> <input checked="" type="checkbox"/> HVAC – House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection </div> <div> <input type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> On-site Sewage Systems </div> </div>			
Description of designer's work HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12		Model: 4504 OPT IN LAW - 5 BED 4 BATH Project: CENTREFIELD (WEST GORMLEY)	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u> (print name)		declare that (choose one as appropriate):	
<input type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____			
<input checked="" type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C. SENTENCE 3.2.4.1 (4)</u>			
<input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.			
June 7, 2021 Date		 Signature of Designer	

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

SITE NAME: CENTREFIELD (WEST GORMLEY)										TYPE: 4504										OPT IN LAW - 5 BED 4 BATH										DATE: Jun-21										WINTER NATURAL AIR CHANGE RATE 0.219										HEAT LOSS AT °F. 78										CSA-F280-12																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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SITE NAME: CENTREFIELD (WEST GORMLEY)
BUILDER: ROYAL PINE HOMES

OPT IN LAW - 5 BED 4 BATH

DATE: Jun-21

CFA: 3223 LO# 91147

HEATING CFM 1370 COOLING CFM 1370
TOTAL HEAT LOSS 48,818 TOTAL HEAT GAIN 41,916
AIR FLOW RATE CFM 28.06 AIR FLOW RATE CFM 32.86

59TNSA-060-14V 60

AFUE = 97 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 58,000

RUN COUNT	4th	3rd	2nd	1st	Bas
SIA	0	0	16	11	5
R/A	0	0	5	3	1

DESIGN CFM = 1370
CFM @ 6" E.S.P.
TEMPERATURE RISE 39 °F

All SIA diffusers 4"x10" unless noted otherwise on layout.
All SIA runs 5'x8" unless noted otherwise on layout.

ROOM NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
WIC	WIC	MBR	MBR	BED-3	BED-4	BED-5	ENS-4/5	WIC-3	BED-4	BED-5	BED-2	LIV	LIV	KT/GT	KT/GT	KT/GT	LAUN	W/R	FOY	HAUD	BAS	BAS	BAS	BAS
RM LOSS MBH	0.30	1.23	1.23	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33
CFM PER RUN HEAT	9	35	35	37	50	32	14	41	50	28	28	32	32	57	57	57	9	15	67	42	83	83	83	83
RM GAIN MBH	0.09	1.90	1.90	2.21	2.58	1.80	0.34	1.46	2.58	1.44	1.44	1.59	1.59	2.53	2.53	2.53	29	12	56	9	13	13	13	13
CFM PER RUN COOLING	3	62	62	72	84	59	11	48	84	47	47	52	52	83	83	83	29	12	56	9	13	13	13	13
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LOH	47	69	69	87	54	81	76	66	72	76	66	71	65	43	30	38	55	59	59	51	30	16	27	48
EQUIVALENT LENGTH	140	150	160	120	160	170	170	140	150	140	170	170	170	130	120	140	130	120	160	190	90	120	120	110
TOTAL EFFECTIVE LENGTH	167	219	227	174	241	246	236	212	226	210	236	241	235	178	150	178	185	179	219	241	120	136	147	158
ADJUSTED PRESSURE	0.09	0.08	0.08	0.1	0.07	0.07	0.07	0.08	0.07	0.08	0.07	0.07	0.07	0.09	0.11	0.09	0.09	0.1	0.08	0.07	0.14	0.12	0.11	0.1
ROUND DUCT SIZE	4	5	5	5	6	6	4	5	6	5	5	5	5	6	6	6	4	4	5	5	6	6	6	6
HEATING VELOCITY (ft/min)	103	257	257	272	255	163	161	301	255	206	206	235	235	291	291	291	103	103	172	492	423	423	423	423
COOLING VELOCITY (ft/min)	34	455	455	529	428	301	126	352	428	345	382	382	382	423	423	423	333	138	411	66	66	66	66	66
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10

ROOM NAME	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
BAS	BAS	DIN	INLAW	ENS	ENS-3	ENS-4	ENS-5	ENS-6	ENS-7	ENS-8	ENS-9	ENS-10	ENS-11	ENS-12	ENS-13	ENS-14	ENS-15	ENS-16	ENS-17	ENS-18	ENS-19	ENS-20	ENS-21	ENS-22
RM LOSS MBH	2.95	1.99	1.77	0.90	1.33	0.51	0.65	1.01	0.65	1.01	0.65	1.01	0.65	1.01	0.65	1.01	0.65	1.01	0.65	1.01	0.65	1.01	0.65	1.01
CFM PER RUN HEAT	83	56	50	25	37	14	18	28	18	28	18	28	18	28	18	28	18	28	18	28	18	28	18	28
RM GAIN MBH	0.41	1.86	2.52	0.67	2.21	0.22	0.28	0.37	0.28	0.37	0.28	0.37	0.28	0.37	0.28	0.37	0.28	0.37	0.28	0.37	0.28	0.37	0.28	0.37
CFM PER RUN COOLING	13	61	62	22	72	7	9	12	7	9	12	7	9	12	7	9	12	7	9	12	7	9	12	7
ADJUSTED PRESSURE	0.16	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LOH	57	49	44	26	43	44	60	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
EQUIVALENT LENGTH	150	140	150	180	180	110	150	170	150	170	150	170	150	170	150	170	150	170	150	170	150	170	150	170
TOTAL EFFECTIVE LENGTH	207	189	194	206	223	154	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210
ADJUSTED PRESSURE	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
ROUND DUCT SIZE	6	6	6	4	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
HEATING VELOCITY (ft/min)	423	286	255	287	272	161	207	321	207	321	207	321	207	321	207	321	207	321	207	321	207	321	207	321
COOLING VELOCITY (ft/min)	66	311	418	252	529	80	103	138	103	138	103	138	103	138	103	138	103	138	103	138	103	138	103	138
OUTLET GRILL SIZE	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10

TRUNK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
TRUNK A	314	0.07	9.4	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
TRUNK B	514	0.07	11.3	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
TRUNK C	806	0.07	13.4	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
TRUNK D	186	0.07	7.5	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
TRUNK E	564	0.07	11.7	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
TRUNK F	1370	0.07	16.3	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
TRUNK W	245	0.05	9.3	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
TRUNK X	1370	0.05	17.7	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
TRUNK Y	1025	0.05	16.9	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
TRUNK Z	490	0.05	12.1	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
DROP	1370	0.05	17.7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24

RESIDENTIAL MECHANICAL VENTILATION RECORD

For Certification of Design and Performance of Residential Ventilation Systems

W2

A	HEATING SYSTEM/ COMBUSTION APPLIANCES	<input checked="" type="checkbox"/> Forced Air	<input type="checkbox"/> Non Forced air	Roll #:	Permit #:	LOCATION H
		<input type="checkbox"/> Electric	<input type="checkbox"/> Gas <input type="checkbox"/> Oil <input type="checkbox"/> Other	Lot & Plan:		
		<input type="checkbox"/> No Combustion Appliances	<input type="checkbox"/> No Depressurization limit	Civic address:		BUILDER I
		<input type="checkbox"/> Solid Fuel (including Fireplaces)	<input type="checkbox"/> 5 pa Depress limit	Name: ROYAL PINE HOMES	House ID#:	
		<input checked="" type="checkbox"/> Direct Vent (sealed combustion)	<input type="checkbox"/> No Dep Limit	Address:		
		<input type="checkbox"/> Positive Venting Induced Draft	<input type="checkbox"/> Pascals limit	City:	P.C.	
		<input type="checkbox"/> Natural Draft or B-Vent Atmospheric	<input type="checkbox"/> 5 pa depress limit	Phone:	Fax:	
		Lowest Depressurization Limit	Pa.	Email Address:		
B	EXHAUST EQUIPMENT	<input checked="" type="checkbox"/> Clothes Dryer(s)	(150 cfm default)	Name: HVAC DESIGNS LTD.	HRAI #: 001820	DESIGNER J
		<input type="checkbox"/> Downdraft Cook Top	(220 cfm default)	Address: 375 FINLEY AVENUE, UNIT 202		
		<input type="checkbox"/> Other (exhaust)	(over 150 cfm)	City: AJAX	P.C. L1S 2E2	
		Depressurization test/Calc. Required?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Phone: (905) - 619 - 2300	Fax: (905) - 619 - 2375	
C	TOTAL VENTILATION CAPACITY (TVC)	Bsmt & Master Bedroom	2 @ 20 cfm 40 cfm	Email Address: info@hvacdsgns.ca	Other #	INSTALLATION CHECKLIST K
		Other Bedrooms	5 @ 10 cfm 50 cfm	I certify this ventilation system design to be in accordance with:		
		Bathrooms & Kitchens	6 @ 10 cfm 60 cfm	<input checked="" type="checkbox"/> CSA F326 M-91		
		Other Hab. Rooms	5 @ 10 cfm 50 cfm	<input type="checkbox"/> R-2000		
		Total Ventilation Capacity (TVC)	200 cfm	Signature:	Date: 6/10/2021	
D	EXHAUST CAPACITY	Minimum Continuous Exhaust		Controls Functioning	<input type="checkbox"/> Fans operating and clean	MEASURED TVC SYSTEMS L
		Kitchen(s) @ 60 cfm = cfm		Filters Clean	<input type="checkbox"/> Flow measuring stations	
		Bathroom(s) @ 20 cfm = cfm		Dampers Accessible	<input type="checkbox"/> Insulated ducts sealed	
		Total cfm		Drain loop and connection	<input type="checkbox"/> Label supply/exhaust hood	
		Minimum Intermittent Exhaust		Distribution to all habitable rooms (non forced air)		
		Kitchen(s) 1 @ 100 cfm = 100 cfm		Forced air system <input type="checkbox"/> Continuous mode <input type="checkbox"/> Interlocked		
		Bathroom(s) 5 @ 50 cfm = 250 cfm		Kitchen intake grease filter	<input type="checkbox"/> Kitchen exh. 40" to range	
		Total 350 cfm		Exhaust 4" above grade	<input type="checkbox"/> Supply 18" above grade	
E	TVC SYSTEM	Location: BSMT		Supply intake 6' from exhaust (recommended)		
		Manufacturer/Model: VANEE 65H	<input checked="" type="checkbox"/> HVI rated	Supply intake 3' from other exhaust		
		Design Airflow 155 cfm high 64 cfm low		TVC system SUPPLY airflow measured		
		HRV/ERV 75 % Sensible Efficiency @ 0°C 64 watts		cfm High cfm Low		
		HRV/ERV 64 % Sensible Efficiency @ -25°C 57 watts		TVC system EXHAUST airflow measured		
				cfm High cfm Low		
F		Name:	HRAI #:			INSTALLER M
		Address:				
G	ADDITIONAL (exhaust) EQUIPMENT	1 Location: ENS	50 cfm 3.5 Sones	City:	P.C.	
		Manufacturer/Model: N/A	<input checked="" type="checkbox"/> TVC <input checked="" type="checkbox"/> HVI	Phone:	Fax:	
		2 Location: ENS-4/5	50 cfm 3.5 Sones	Email Address:		
		Manufacturer/Model: N/A	<input checked="" type="checkbox"/> TVC <input checked="" type="checkbox"/> HVI	I certify this ventilation system install to be in accordance with:		
		3 Location: ENS-2/3	50 cfm 3.5 Sones	<input checked="" type="checkbox"/> CSA F326 M-91		
		Manufacturer/Model: N/A	<input checked="" type="checkbox"/> TVC <input checked="" type="checkbox"/> HVI	<input type="checkbox"/> R-2000		
		4 Location: W/R	50 cfm 3.5 Sones	Signature:	Date:	
		Manufacturer/Model: N/A	<input checked="" type="checkbox"/> TVC <input checked="" type="checkbox"/> HVI			

Prepared By: HVAC DESIGNS LTD.	HRAI #: 001820	Job Name: CITY OF RICHMOND HILL
Signature:	Date: 6/10/2021	Job #: 91147

08/12/2021

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Per: Residential Ventilation WORKSHEET W-2 r 08/10



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CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																											
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																											
LO#: 91147	Model: 4504	Builder: ROYAL PINE HOMES	Date: 6/7/2021																																																								
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5.2.3.1 Heat Loss due to Air Leakage																																																											
$HL_{airb} = LR_{airb} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$																																																											
0.219	x	328.53	x																																																								
		43 °C	x																																																								
		1.2	x																																																								
			= 372.7 W																																																								
			= 12718 Btu/h																																																								
5.2.3.2 Heat Loss due to Mechanical Ventilation																																																											
$HL_{airbv} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																											
149 CFM	x	78 °F	x																																																								
		1.08	x																																																								
		0.25	x																																																								
			= 3134 Btu/h																																																								
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																											
$HL_{airr} = Level Factor \times HL_{airbv} \times \{ (HL_{agcr} + HL_{agcr}) \div (HL_{agclevel} + HL_{bgclevel}) \}$																																																											
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5	0		0	0.000																																																							
<p>*HL_{airbv} = Air leakage heat loss + ventilation heat loss</p> <p>*For a balanced or supply only ventilation system HL_{airbv} = 0</p>																																																											

CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4504	OPT IN LAW - 5 BED 4 BATH	BUILDER: ROYAL PINE HOMES
SFQT: 3223	LO# 91147	SITE: CENTREFIELD (WEST GORMLEY)

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:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	41767.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
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: 46.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	166.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component**CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

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**Compliance Package
SB-12 PERFORMANCE****Nominal Min. Eff.**

Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
Basement Walls Minimum RSI (R)-Value	20	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	1.6	-
Skylights Maximum U-Value	2.6	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

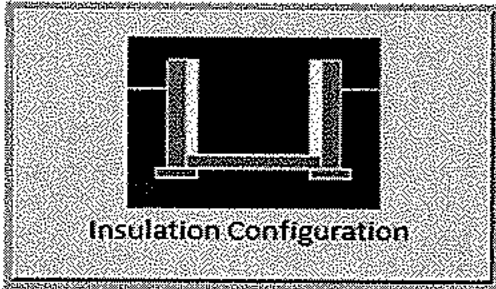
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Residential Foundation Thermal Load Calculator

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):	14.0	 Insulation Configuration
Floor Width (m):	11.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.9	
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):	1638	

TYPE: 4504
LO# 91147

OPT IN LAW - 5 BED 4 BATH

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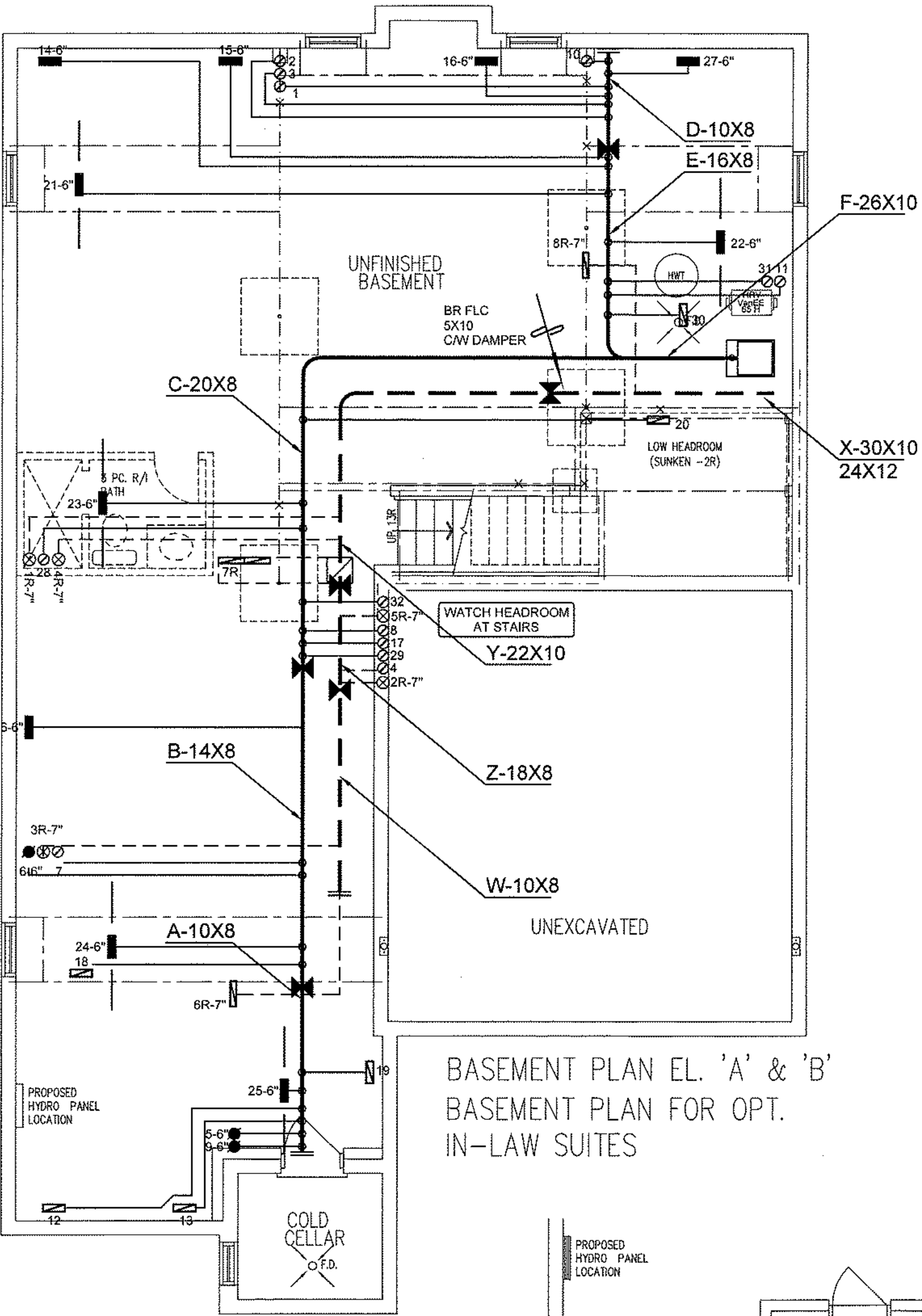
Air Infiltration Residential Load Calculator

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):	6.40		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	1182.7		
Air Leakage/Ventilation			
Air Tightness Type:	Energy Star Detached (2.5 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1104.1 cm ²	
	2.50	ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust	
	70.4	70.4	
Flue Size			
Flue #:	#1	#2	#3
Diameter (mm):	0	0	0
		#4	0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.219		
Cooling Air Leakage Rate (ACH/H):	0.068		

TYPE: 4504
LO# 91147

OPT IN LAW - 5 BED 4 BATH



BASEMENT PLAN EL. 'A' & 'B'
BASEMENT PLAN FOR OPT.
IN-LAW SUITES

BASEMENT PLAN EL. 'C'

CITY OF RICHMOND HILL
BUILDING DIVISION
08/12/2021
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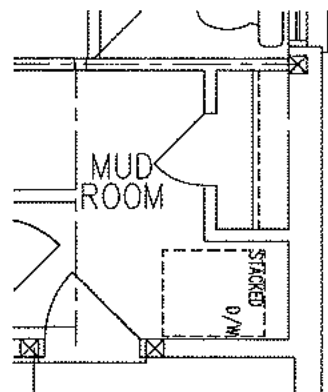
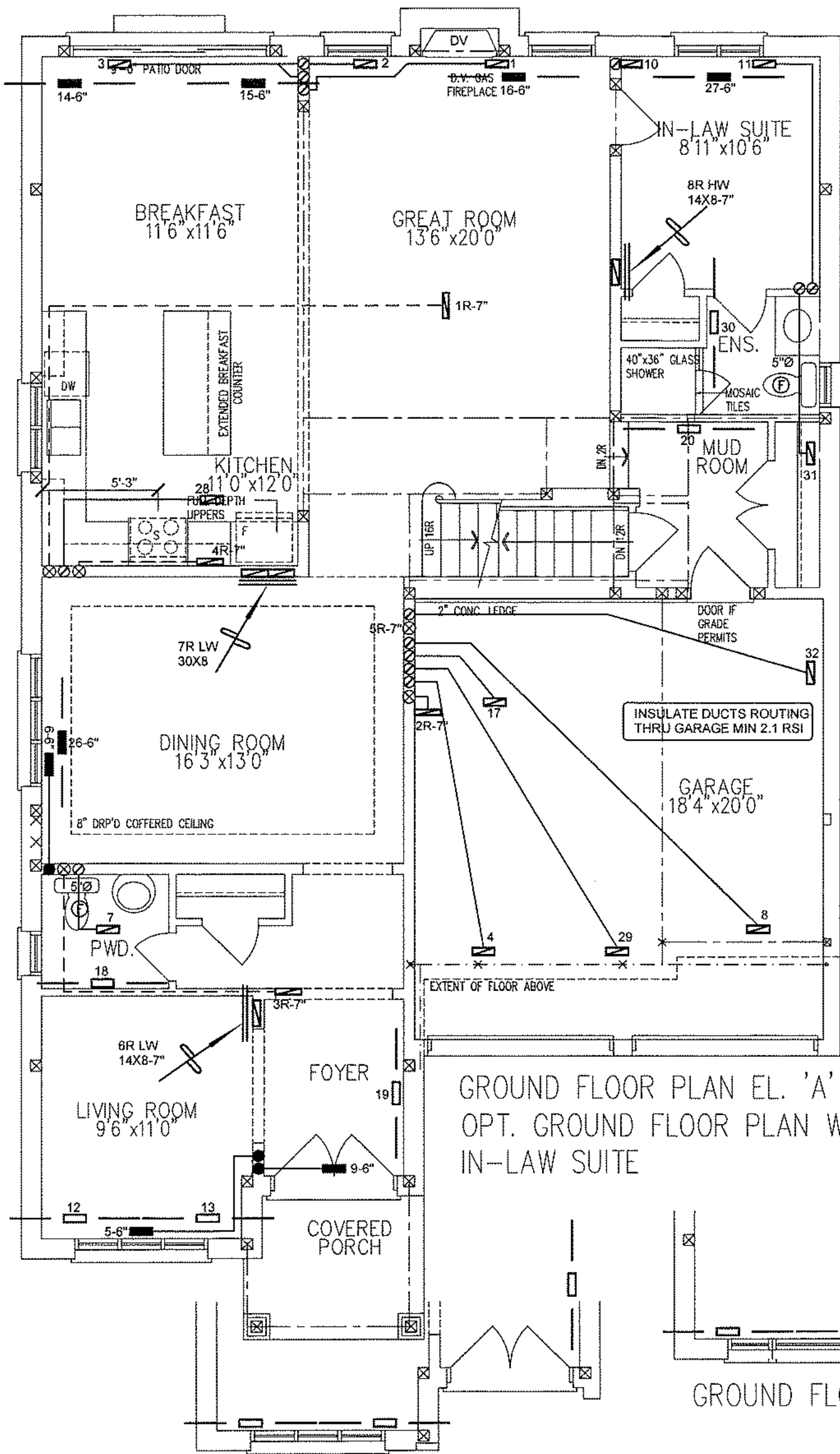
CSA-F280-12
SB-12 PERFORMANCE

1 MICHAEL O'Rourke HAS REVIEWED AND TAKEN RESPONSIBILITY FOR THE DESIGN WORK AND ANY QUALIFIED UNDER DIVISION C, 3.2.3 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

HVAC LEGEND						REVISIONS		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Description	Date
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE	3.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	2.		
	SUPPLY AIR BOOT ABOVE		8" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	1.		
					REDUCER			

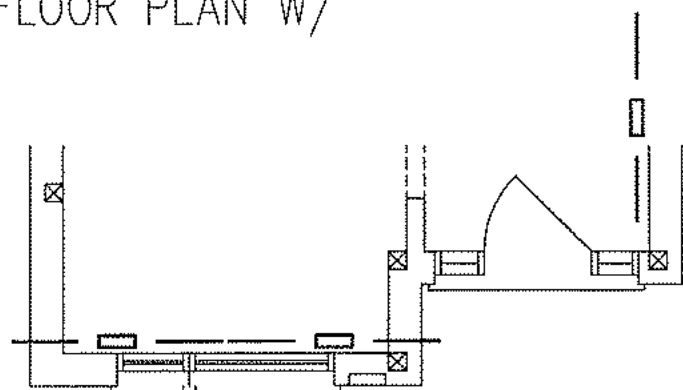
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS 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 ROYAL PINE HOMES Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO OPT IN LAW - 5 BED 4 BATH 4504 3223 sqft	HVAC DESIGNS LTD. 375 Finlay Ave. Suite 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 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.	HEAT LOSS 51952 BTU/H UNIT DATA MAKE CARRIER MODEL 59TN6A-060-14V INPUT 60 MBTU/H OUTPUT 58 MBTU/H COOLING 3.5 TONS FAN SPEED 1370 cfm @ 0.5" w.c.	# OF RUNS S/A R/A FANS 3RD FLOOR 2ND FLOOR 16 5 5 1ST FLOOR 11 3 3 BASEMENT 5 1 0 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	Sheet Title BASEMENT HEATING LAYOUT Date JUNE/2021 Scale 3/16" = 1'-0" BCIN# 19669 LO# 91147



OPT. IN-LAW SUITE
W/ OPT. LAUNDRY

GROUND FLOOR PLAN EL. 'A'
OPT. GROUND FLOOR PLAN W/
IN-LAW SUITE



GROUND FLOOR PLAN EL. 'C'

GROUND FLOOR PLAN EL. 'B'

CSA-F280-12

SB-12 PERFORMANCE

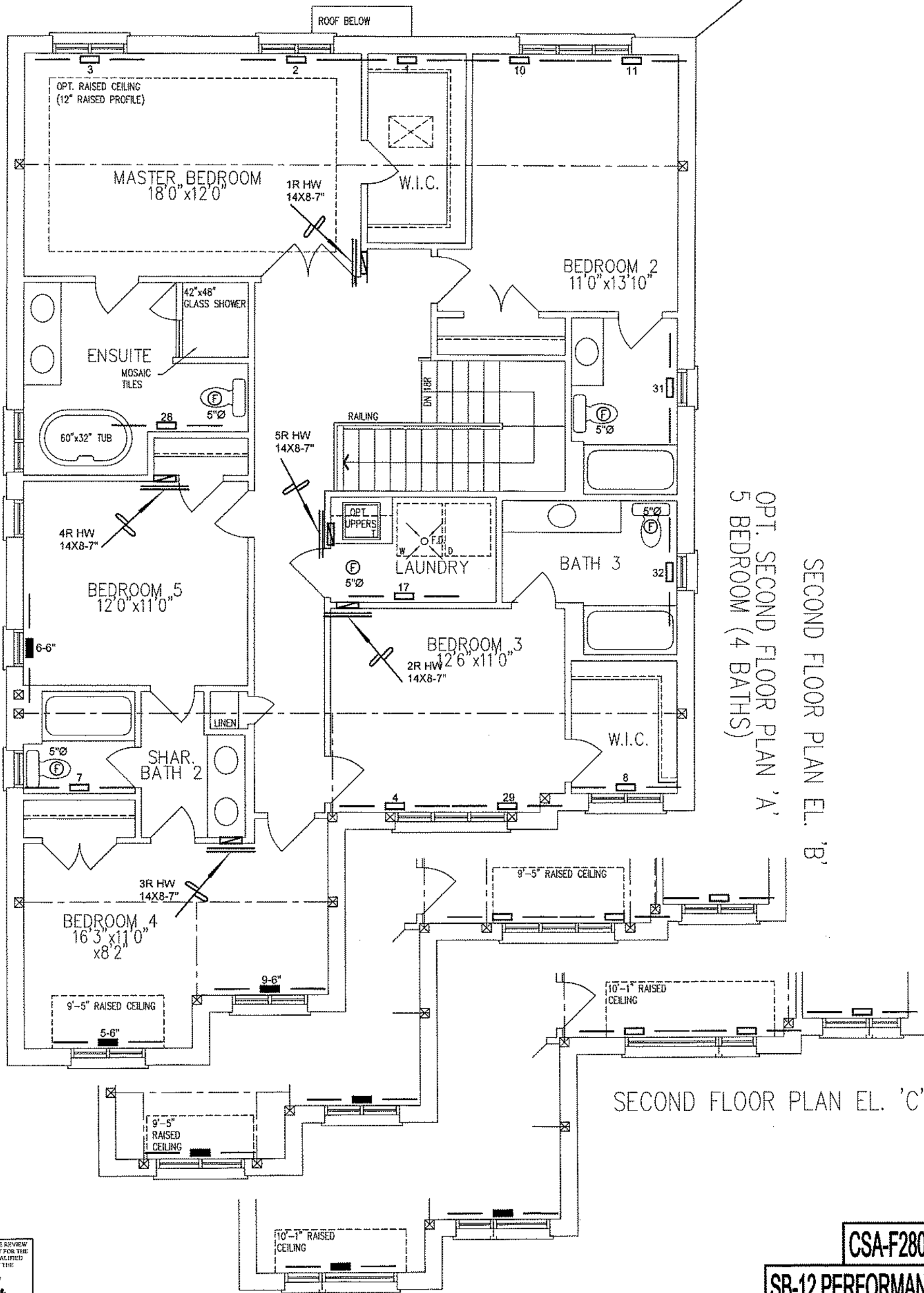
I MICHAEL O'DRISCOLL HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

Michael O'Driscoll, 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
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER
						No.	Description
						Date	

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 ROYAL PINE HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacadesigns.ca Web: www.hvacadesigns.ca Specializing in Residential Mechanical Design Services	<div>CITY OF RICHMOND HILL BUILDING DIVISION</div> <div>08/12/2021</div> <div>RECEIVED</div> <div>Per: _____</div>	Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO				Date JUNE/2021	Scale 3/16" = 1'-0"
OPT IN LAW - 5 BED 4 BATH 4504 3223 sqft		BCIN# 19669			
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.		LO#		91147	



SECOND FLOOR PLAN EL. 'B'
OPT. SECOND FLOOR PLAN 'A'
5 BEDROOM (4 BATHS)

SECOND FLOOR PLAN EL. 'C'

1 MICHAEL O'BROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.5 OF THE BUILDING CODE.
Michael O'Brourke
MICHAEL O'BROURKE, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
SB-12 PERFORMANCE

HVAC LEGEND								
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	3.
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x6" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	2.
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA - FLOOR RETURN AIR GRILLE		REDUCER	1.
REVISIONS								
No.	Description	Date						

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.

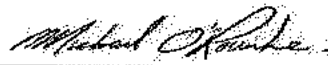
Client ROYAL PINE HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	CITY OF RICHMOND HILL BUILDING DIVISION 08/12/2021 RECEIVED Per: _____	Sheet Title SECOND FLOOR HEATING LAYOUT		
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO				Date JUNE/2021	Scale 3/16" = 1'-0"	
OPT IN LAW - 5 BED 4 BATH 4504 3223 sqft		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.		BCIN# 19669		
				LO#	91147	

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Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information			
Building number, street name		Unit no.	Lot/con.
Municipality	Postal code	Plan number/ other description	
RICHMOND HILL			
B. Individual who reviews and takes responsibility for design activities			
Name		Firm	
MICHAEL O'ROURKE		HVAC DESIGNS LTD.	
Street address		Unit no.	Lot/con.
375 FINLEY AVE		202	N/A
Municipality	Postal code	Province	E-mail
AJAX	L1S 2E2	ONTARIO	info@hvacdesigns.ca
Telephone number	Fax number	Cell number	
(905) 619-2300	(905) 619-2375	()	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]			
<input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings <input checked="" type="checkbox"/> HVAC – House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection <input type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> On-site Sewage Systems			
Description of designer's work		Model: 4504	
HEAT LOSS / GAIN CALCULATIONS		OPT IN LAW & OPT. 2ND	
DUCT SIZING		Project: CENTREFIELD (WEST GORMLEY)	
RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY			
RESIDENTIAL SYSTEM DESIGN per CSA-F280-12			
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u>		declare that (choose one as appropriate):	
(print name)			
<input type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____			
<input checked="" type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C. SENTENCE 3.2.4.1 (4)</u>			
<input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge.			
2. I have submitted this application with the knowledge and consent of the firm.			
June 7, 2021			
Date		Signature of Designer	

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

**CITY OF RICHMOND HILL
BUILDING DIVISION**

Richard P. L.

TOTAL COMBINED HEAT LOSS BTU/H: 51576

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 ACIN: 19569

MICHAEL CRONIN

GFA: 3223 LO# 90463

**CARRIER

****CARRIER**

AFUE = 97 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 58,000

MEDLOW	0
MEDIUM	0
MEDIUM HIGH	1370
HIGH	1520

TEMPERATURE RISE 39 °F

CITY OF RICHMOND HI

BUILDING DIVISION

08/12/2021

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Per: _____

RUN #	25	26	27	28	29	30
ROOM NAME	BAS	DIN	INLAW	ENS	BED-3	ENS-IL
RM LOSS MBH	2.95	1.99	1.77	0.91	1.33	0.51
CFM PER RUN HEAT	83	56	50	26	38	14
RM GAIN MBH	0.41	1.86	2.52	0.87	2.21	0.22
CFM PER RUN COOLING	13	61	83	22	73	7
ADJUSTED PRESSURE	0.16	0.17	0.16	0.17	0.17	0.17
ACTUAL DUCT LGH	57	49	44	26	43	44
EQUIVALENT LENGTH	150	140	150	180	180	110
TOTAL EFFECTIVE LENGTH	207	189	194	206	223	154
ADJUSTED PRESSURE	0.08	0.09	0.08	0.08	0.08	0.11
ROUND DUCT SIZE	6	6	6	4	5	4
HEATING VELOCITY (ft/min)	423	286	255	288	279	161
COOLING VELOCITY (ft/min)	66	311	423	252	536	80
OUTLET GRILL SIZE	4X10	4X10	4X10	3X10	3X10	3X10
TRUNK	A	B	D	C	C	E

**CITY OF RICHMOND HILL
BUILDING DIVISION**

08/12/2021

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Per:

SUPPLY AIR TRUNK SIZE					RETURN AIR TRUNK SIZE				
TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (FPM)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (FPM)
TRUNK A 316	0.07	9.4	10	8	TRUNK G 0	0.05	0	0	8
TRUNK B 517	0.07	11.3	14	8	TRUNK H 0	0.05	0	0	8
TRUNK C 816	0.07	13.4	20	8	TRUNK I 0	0.05	0	0	8
TRUNK D 187	0.08	7.5	10	8	TRUNK J 0	0.05	0	0	8
TRUNK E 555	0.07	11.6	16	8	TRUNK K 0	0.05	0	0	8
TRUNK F 1270	0.07	11.6	20	8	TRUNK L 0	0.05	0	0	8

[illegible]

RESIDENTIAL MECHANICAL VENTILATION RECORD

For Certification of Design and Performance of Residential Ventilation Systems

A	HEATING SYSTEM/ COMBUSTION APPLIANCES	<input checked="" type="checkbox"/> Forced Air	<input type="checkbox"/> Non Forced air	Roll #:	Permit #:	LOCATION	
		<input type="checkbox"/> Electric	<input type="checkbox"/> Gas <input type="checkbox"/> Oil <input type="checkbox"/> Other	Lot & Plan:			BUILDER
		<input type="checkbox"/> No Combustion Appliances	<input type="checkbox"/> No Depressurization limit	Civic address:			
		<input type="checkbox"/> Solid Fuel (including Fireplaces)	<input type="checkbox"/> 5 pa Depress limit	Name: ROYAL PINE HOMES	House ID#:		
B	EXHAUST EQUIPMENT	<input checked="" type="checkbox"/> Direct Vent (sealed combustion)	<input type="checkbox"/> No Dep Limit	Address:		DESIGNER	
		<input type="checkbox"/> Positive Venting Induced Draft	<input type="checkbox"/> Pascals limit	City:	P.C.		
		<input type="checkbox"/> Natural Draft or B-Vent Atmospheric	<input type="checkbox"/> 5 pa depress limit	Phone:	Fax:		
		<input type="checkbox"/> Lowest Depressurization Limit	<input type="checkbox"/> Pa.	Email Address:			
C	TOTAL VENTILATION CAPACITY (TVC)	<input checked="" type="checkbox"/> Clothes Dryer(s)	(150 cfm default)	Name: HVAC DESIGNS LTD.	HRAI #: 001820	INSTALLATION CHECKLIST	
		<input type="checkbox"/> Downdraft Cook Top	(220 cfm default)	Address: 375 FINLEY AVENUE, UNIT 202			
		<input type="checkbox"/> Other (exhaust)	(over 150 cfm)	City: AJAX	P.C. L15 2E2		
		Depressurization test/Calc. Required?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Phone: (905) - 619 - 2300	Fax: (905) - 619 - 2375		
D	EXHAUST CAPACITY	Bsmt & Master Bedroom	2 @ 20 cfm 40 cfm	Email Address: info@hvacdesigns.ca	Other #	MEASURED TVC SYSTEMS	
		Other Bedrooms	5 @ 10 cfm 50 cfm	I certify this ventilation system design to be in accordance with:			
		Bathrooms & Kitchens	6 @ 10 cfm 60 cfm	<input checked="" type="checkbox"/> CSA F326 M-91			
		Other Hab. Rooms	5 @ 10 cfm 50 cfm	<input type="checkbox"/> R-2000			
E	EXHAUST CAPACITY	Total Ventilation Capacity (TVC)		200 cfm	Signature:	Date: 6/10/2021	
		Minimum Continuous Exhaust			Controls Functioning	Fans operating and clean	
		Kitchen(s)	@ 60 cfm = cfm	Filters Clean	Flow measuring stations		
		Bathroom(s)	@ 20 cfm = cfm	Dampers Accessible	Insulated ducts sealed		
F	TVC SYSTEM	Minimum Intermittent Exhaust			Drain loop and connection	Label supply/exhaust hood	
		Kitchen(s)	1 @ 100 cfm = 100 cfm	Distribution to all habitable rooms (non forced air)			
		Bathroom(s)	5 @ 50 cfm = 250 cfm	Forced air system <input type="checkbox"/> Continuous mode <input type="checkbox"/> Interlocked			
		Total	350 cfm	Kitchen intake grease filter	Kitchen exh. 40" to range		
G	ADDITIONAL (EXHAUST) EQUIPMENT	Location: BSMT			Exhaust 4" above grade	Supply 18" above grade	
		Manufacturer/Model: VANEE 65H	<input checked="" type="checkbox"/> HVI rated	TVC system SUPPLY airflow measured			
		Design Airflow 155 cfm high 64 cfm low		cfm High cfm Low			
		HRV/ERV 75 % Sensible Efficiency @ 0°C 64 watts		cfm High cfm Low			
H	ADDITIONAL (EXHAUST) EQUIPMENT	Location: ENS		50 cfm 3.5 Sones	Name:	HRAI #:	
		Manufacturer/Model: N/A	<input checked="" type="checkbox"/> TVC <input checked="" type="checkbox"/> HVI	Address:			
		Location: ENS-4/5	50 cfm 3.5 Sones	City:	P.C.		
		Manufacturer/Model: N/A	<input checked="" type="checkbox"/> TVC <input checked="" type="checkbox"/> HVI	Phone:	Fax:		
I	ADDITIONAL (EXHAUST) EQUIPMENT	Location: ENS-2/3		50 cfm 3.5 Sones	Email Address:		
		Manufacturer/Model: N/A	<input checked="" type="checkbox"/> TVC <input checked="" type="checkbox"/> HVI	I certify this ventilation system install to be in accordance with:			
		Location: W/R	50 cfm 3.5 Sones	CSA F326 M-91			
		Manufacturer/Model: N/A	<input checked="" type="checkbox"/> TVC <input checked="" type="checkbox"/> HVI	R-2000			
J	ADDITIONAL (EXHAUST) EQUIPMENT	Location: W/R		50 cfm 3.5 Sones	Signature:	Date:	
		Manufacturer/Model: N/A	<input checked="" type="checkbox"/> TVC <input checked="" type="checkbox"/> HVI				

Prepared By: HVAC DESIGNS LTD.	HRAI #: 001820	City: RICHMOND HILL	Job Name: BUILDING DIVISION
Signature:	Date: 6/10/2021	Job #: 90463	Official Use:

08/12/2021

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations																													
Formula Sheet (For Air Leakage / Ventilation Calculation)																													
LO#: 90463	Model: 4504																												
Builder: ROYAL PINE HOMES																													
Date: 6/7/2021																													
Air Change & Delta T Data																													
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="2">WINTER NATURAL AIR CHANGE RATE</td> <td>0.219</td> </tr> <tr> <td colspan="2">SUMMER NATURAL AIR CHANGE RATE</td> <td>0.068</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE		0.219	SUMMER NATURAL AIR CHANGE RATE		0.068																						
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<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="4">Design Temperature Difference</th> </tr> <tr> <th></th> <th>T_{in} °C</th> <th>T_{out} °C</th> <th>ΔT °C</th> </tr> <tr> <td>Winter DTDh</td> <td>22</td> <td>-21</td> <td>43</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>31</td> <td>7</td> </tr> <tr> <td></td> <td></td> <td></td> <td>ΔT °F</td> </tr> <tr> <td></td> <td></td> <td></td> <td>78</td> </tr> <tr> <td></td> <td></td> <td></td> <td>13</td> </tr> </table>		Design Temperature Difference					T _{in} °C	T _{out} °C	ΔT °C	Winter DTDh	22	-21	43	Summer DTDc	24	31	7				ΔT °F				78				13
Design Temperature Difference																													
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			ΔT °F																										
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			13																										
6.2.6 Sensible Gain due to Air Leakage																													
$HG_{salb} = LR_{airb} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$																													
0.219	$= 0.068 \times 328.53 \times 7^\circ\text{C} \times 1.2 = 191 \text{ W}$																												
	$= 12718 \text{ Btu/h}$																												
6.2.7 Sensible heat Gain due to Ventilation																													
$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$																													
149 CFM	$= 149 \text{ CFM} \times 13^\circ\text{F} \times 1.08 \times 0.25 = 516 \text{ Btu/h}$																												
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																													
$HL_{airr} = \text{Level Factor} \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																													
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HL_{airbv} Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{agcr})</th> <th>Air Leakage Heat Loss Multiplier (LF × HL_{airbv} / HL_{level})</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.5</td> <td rowspan="5">12,718</td> <td>8,378</td> <td>0.759</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>13,227</td> <td>0.288</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>13,648</td> <td>0.186</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)	HL _{airbv} Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{agcr})	Air Leakage Heat Loss Multiplier (LF × HL _{airbv} / HL _{level})	1	0.5	12,718	8,378	0.759	2	0.3	13,227	0.288	3	0.2	13,648	0.186	4	0	0	0.000	5	0	0	0.000		
Level	Level Factor (LF)	HL _{airbv} Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{agcr})	Air Leakage Heat Loss Multiplier (LF × HL _{airbv} / HL _{level})																									
1	0.5	12,718	8,378	0.759																									
2	0.3		13,227	0.288																									
3	0.2		13,648	0.186																									
4	0		0	0.000																									
5	0		0	0.000																									
<p>*HL_{airbv} = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system: HL_{airbv} = 0</p>																													

CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4504	OPT IN LAW & OPT. 2ND	BUILDER: ROYAL PINE HOMES
SFQT: 3223	LO# 90463	SITE: CENTREFIELD (WEST GORMLEY)

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:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	41767.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
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: 46.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	166.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component**

Ceiling with Attic Space Minimum RSI (R)-Value	
Ceiling Without Attic Space Minimum RSI (R)-Value	
Exposed Floor Minimum RSI (R)-Value	
Walls Above Grade Minimum RSI (R)-Value	
Basement Walls Minimum RSI (R)-Value	
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	
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	
Windows and Sliding Glass Doors Maximum U-Value	
Skylights Maximum U-Value	
Space Heating Equipment Minimum AFUE	
HRV Minimum Efficiency	
Domestic Hot Water Heater Minimum EF	

**CITY OF RICHMOND HILL
BUILDING DIVISION****08/12/2021****RECEIVED**

Per: _____

**Compliance Package
SB-12 PERFORMANCE**

Nominal	Min. Eff.
60	59.20
31	27.70
31	29.80
22+1.5	18.50
20	21.12
-	-
10	10
10	11.13
1.6	-
2.6	-
0.96	-
75%	-
TE=94%	-

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

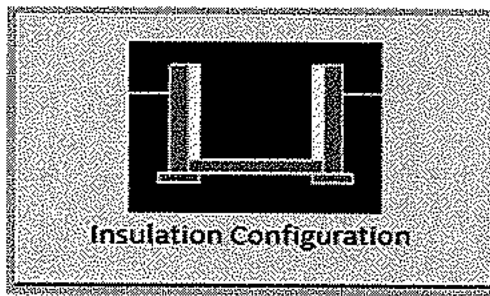
08/12/2021

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Per: _____

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):	14.0	 Insulation Configuration
Floor Width (m):	11.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.9	
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):		1638

08/12/2021

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Per: _____

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

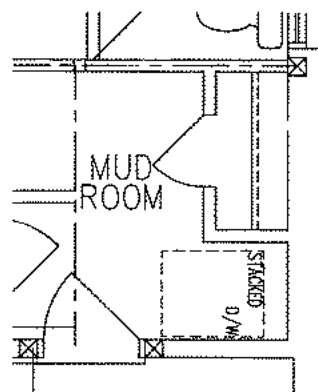
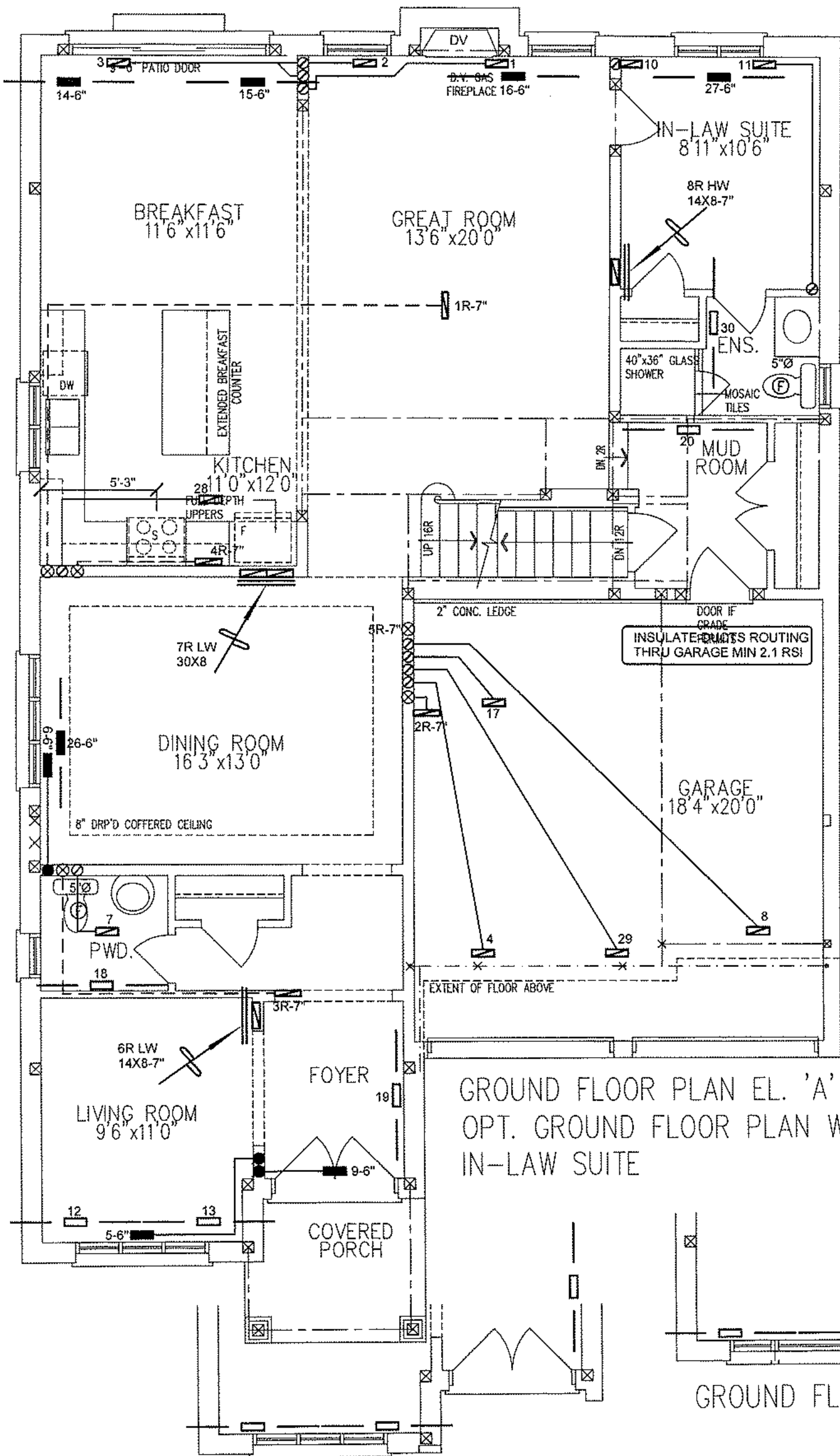
Weather Station Description				
Province:	Ontario			
Region:	Richmond Hill			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.40			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1182.7			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1104.1 cm ²		
	2.50	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	70.4	70.4		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.219			
Cooling Air Leakage Rate (ACH/H):	0.068			

TYPE: 4504

LO# 90463

OPT IN LAW & OPT. 2ND





OPT. IN-LAW SUITE
W/ OPT. LAUNDRY

GROUND FLOOR PLAN EL. 'A'
OPT. GROUND FLOOR PLAN W/
IN-LAW SUITE

GROUND FLOOR PLAN EL. 'C'

GROUND FLOOR PLAN EL. 'B'

I MICHAEL O'DRISCOLL HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.12.3 OF THE BUILDING CODE.

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

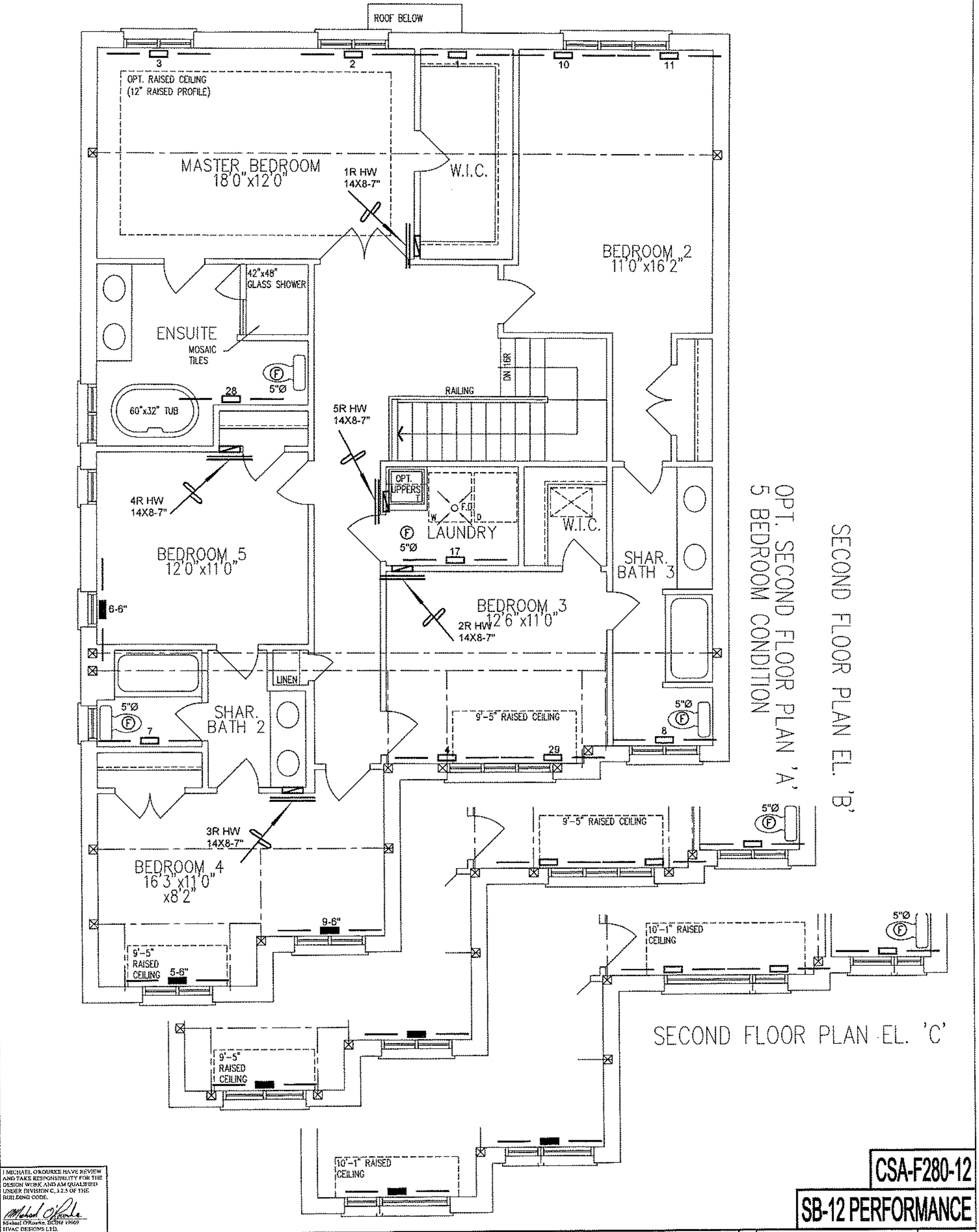
CSA-F280-12

SB-12 PERFORMANCE

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
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		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 ROYAL PINE HOMES		 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	<div>CITY OF RICHMOND HILL BUILDING DIVISION</div> <div>08/12/2021</div> <div>RECEIVED</div> <div>Per: _____</div>	Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO					
OPT IN LAW & OPT. 2ND 4504 3223 sqft		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.		Date APR/2021	
				Scale 3/16" = 1'-0"	
				BCIN# 19669	
				LO# 90463	



I HEREBY, ON BEHALF OF THE CLIENT, REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.3 OF THE BUILDING CODE.

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

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

ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO

OPT IN LAW & OPT. 2ND
4504

3223 sqft

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@hvacdsgns.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.

CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

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Per: _____

Sheet Title

SECOND FLOOR
HEATING
LAYOUT

Date

APR/2021

Scale

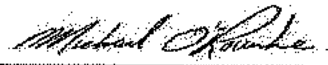
3/16" = 1'-0"

BCIN# 19669

LO# **90463**

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information			
Building number, street name		Unit no.	Lot/con.
Municipality RICHMOND HILL	Postal code	Plan number/ other description	
B. Individual who reviews and takes responsibility for design activities			
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.	
Street address 375 FINLEY AVE		Unit no. 202	Lot/con. N/A
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdsgns.ca
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]			
<input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings <input checked="" type="checkbox"/> HVAC – House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection <input type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> On-site Sewage Systems			
Description of designer's work HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12		Model: 4504 OPT. IN LAW Project: CENTREFIELD (WEST GORMLEY)	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u> (print name)		declare that (choose one as appropriate):	
<input type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____			
<input checked="" type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>			
<input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.			
June 7, 2021 Date		 Signature of Designer	

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Application for a Permit Construct or Demolish – Effective January 1, 2015

CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

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Per: _____

SITE NAME: CENTREFIELD (WEST GORMLEY)										DATE: Jun-21		WINTER NATURAL AIR CHANGE RATE 0.219		HEAT LOSS AT °F. 78		CSA-F280-12	
BUILDER: ROYAL PINE HOMES										LO# 87613		SUMMER NATURAL AIR CHANGE RATE 0.068		HEAT GAIN AT °F. 13		SB-12 PERFORMANCE	
OPT. IN LAW TYPE: 4504										GFA: 3223		BATH		ENS-2		I-ENS	
ROOM USE										BED-2		BED-3		BED-4		LO# 87613	
EXP. WALL CLG. HT.										35		48		17			
FACTORS										280		384		136			
GRS WALL AREA										LOSS		LOSS		LOSS			
GLAZING										GAIN		GAIN		GAIN			
NORTH										0		0		0			
EAST										67		1460		2784			
SOUTH										0		0		0			
WEST										0		0		0			
SKYL.										0		0		0			
DOORS										0		0		0			
NET EXPOSED WALL										213		320		506			
NET EXPOSED BENT WALL ABOVE GR										0		0		0			
EXPOSED CLG										280		368		185			
NO ATTIC EXPOSED CLG										0		0		0			
EXPOSED FLOOR										280		731		120			
BASEMENT/CRAWL HEAT LOSS										0		0		0			
SLAB ON GRADE HEAT LOSS										0		0		0			
SUBTOTAL HT LOSS										1965		3129		1234			
SUB TOTAL HT GAIN										0.20		0.19		0.19			
LEVEL FACTOR / MULTIPLIER										500		601		236			
AIR CHANGE HEAT LOSS										56		135		29			
AIR CHANGE HEAT GAIN										0		0		0			
DUCT LOSS										0		0		0			
DUCT GAIN										0		0		0			
HEAT GAIN PEOPLE										2		480		0			
HEAT GAIN APPLIANCES/LIGHTS										596		596		596			
TOTAL HT LOSS BTU/H										3108		3741		1471			
TOTAL HT GAIN x 1.3 BTU/H										4061		5228		1971			

ROOM USE	FACTORS		LIV		DIN		KITGT		IN LAW		LAUN		WIR		FOY		MUD		BAS	
EXP. WALL	EXP. WALL		EXP. WALL		EXP. WALL		EXP. WALL		EXP. WALL		EXP. WALL		EXP. WALL		EXP. WALL		EXP. WALL		EXP. WALL	
CLO. HT.	CLO. HT.		CLO. HT.		CLO. HT.		CLO. HT.		CLO. HT.		CLO. HT.		CLO. HT.		CLO. HT.		CLO. HT.		CLO. HT.	
GRS.WALL AREA	GRS.WALL AREA		GRS.WALL AREA		GRS.WALL AREA		GRS.WALL AREA		GRS.WALL AREA		GRS.WALL AREA		GRS.WALL AREA		GRS.WALL AREA		GRS.WALL AREA		GRS.WALL AREA	
GLAZING	GLAZING		GLAZING		GLAZING		GLAZING		GLAZING		GLAZING		GLAZING		GLAZING		GLAZING		GLAZING	
NORTH	NORTH		NORTH		NORTH		NORTH		NORTH		NORTH		NORTH		NORTH		NORTH		NORTH	
EAST	EAST		EAST		EAST		EAST		EAST		EAST		EAST		EAST		EAST		EAST	
SOUTH	SOUTH		SOUTH		SOUTH		SOUTH		SOUTH		SOUTH		SOUTH		SOUTH		SOUTH		SOUTH	
WEST	WEST		WEST		WEST		WEST		WEST		WEST		WEST		WEST		WEST		WEST	
SKYLT.	SKYLT.		SKYLT.		SKYLT.		SKYLT.		SKYLT.		SKYLT.		SKYLT.		SKYLT.		SKYLT.		SKYLT.	
DOORS	DOORS		DOORS		DOORS		DOORS		DOORS		DOORS		DOORS		DOORS		DOORS		DOORS	
NET EXPOSED WALL	NET EXPOSED WALL		NET EXPOSED WALL		NET EXPOSED WALL		NET EXPOSED WALL		NET EXPOSED WALL		NET EXPOSED WALL		NET EXPOSED WALL		NET EXPOSED WALL		NET EXPOSED WALL		NET EXPOSED WALL	
NET EXPOSED BENT WALL ABOVE GR	NET EXPOSED BENT WALL ABOVE GR		NET EXPOSED BENT WALL ABOVE GR		NET EXPOSED BENT WALL ABOVE GR		NET EXPOSED BENT WALL ABOVE GR		NET EXPOSED BENT WALL ABOVE GR		NET EXPOSED BENT WALL ABOVE GR		NET EXPOSED BENT WALL ABOVE GR		NET EXPOSED BENT WALL ABOVE GR		NET EXPOSED BENT WALL ABOVE GR		NET EXPOSED BENT WALL ABOVE GR	
EXPOSED CLG	EXPOSED CLG		EXPOSED CLG		EXPOSED CLG		EXPOSED CLG		EXPOSED CLG		EXPOSED CLG		EXPOSED CLG		EXPOSED CLG		EXPOSED CLG		EXPOSED CLG	
NO ATTIC EXPOSED CLG	NO ATTIC EXPOSED CLG		NO ATTIC EXPOSED CLG		NO ATTIC EXPOSED CLG		NO ATTIC EXPOSED CLG		NO ATTIC EXPOSED CLG		NO ATTIC EXPOSED CLG		NO ATTIC EXPOSED CLG		NO ATTIC EXPOSED CLG		NO ATTIC EXPOSED CLG		NO ATTIC EXPOSED CLG	
EXPOSED FLOOR	EXPOSED FLOOR		EXPOSED FLOOR		EXPOSED FLOOR		EXPOSED FLOOR		EXPOSED FLOOR		EXPOSED FLOOR		EXPOSED FLOOR		EXPOSED FLOOR		EXPOSED FLOOR		EXPOSED FLOOR	
BASEMENT/CRAWL HEAT LOSS	BASEMENT/CRAWL HEAT LOSS		BASEMENT/CRAWL HEAT LOSS		BASEMENT/CRAWL HEAT LOSS		BASEMENT/CRAWL HEAT LOSS		BASEMENT/CRAWL HEAT LOSS		BASEMENT/CRAWL HEAT LOSS		BASEMENT/CRAWL HEAT LOSS		BASEMENT/CRAWL HEAT LOSS		BASEMENT/CRAWL HEAT LOSS		BASEMENT/CRAWL HEAT LOSS	
SLAB ON GRADE HEAT LOSS	SLAB ON GRADE HEAT LOSS		SLAB ON GRADE HEAT LOSS		SLAB ON GRADE HEAT LOSS		SLAB ON GRADE HEAT LOSS		SLAB ON GRADE HEAT LOSS		SLAB ON GRADE HEAT LOSS		SLAB ON GRADE HEAT LOSS		SLAB ON GRADE HEAT LOSS		SLAB ON GRADE HEAT LOSS		SLAB ON GRADE HEAT LOSS	
SUBTOTAL HT LOSS	SUBTOTAL HT LOSS		SUBTOTAL HT LOSS		SUBTOTAL HT LOSS		SUBTOTAL HT LOSS		SUBTOTAL HT LOSS		SUBTOTAL HT LOSS		SUBTOTAL HT LOSS		SUBTOTAL HT LOSS		SUBTOTAL HT LOSS		SUBTOTAL HT LOSS	
SUB TOTAL HT GAIN	SUB TOTAL HT GAIN		SUB TOTAL HT GAIN		SUB TOTAL HT GAIN		SUB TOTAL HT GAIN		SUB TOTAL HT GAIN		SUB TOTAL HT GAIN		SUB TOTAL HT GAIN		SUB TOTAL HT GAIN		SUB TOTAL HT GAIN		SUB TOTAL HT GAIN	
LEVEL FACTOR / MULTIPLIER	LEVEL FACTOR / MULTIPLIER		LEVEL FACTOR / MULTIPLIER		LEVEL FACTOR / MULTIPLIER		LEVEL FACTOR / MULTIPLIER		LEVEL FACTOR / MULTIPLIER		LEVEL FACTOR / MULTIPLIER		LEVEL FACTOR / MULTIPLIER		LEVEL FACTOR / MULTIPLIER		LEVEL FACTOR / MULTIPLIER		LEVEL FACTOR / MULTIPLIER	
AIR CHANGE HEAT LOSS	AIR CHANGE HEAT LOSS		AIR CHANGE HEAT LOSS		AIR CHANGE HEAT LOSS		AIR CHANGE HEAT LOSS		AIR CHANGE HEAT LOSS		AIR CHANGE HEAT LOSS		AIR CHANGE HEAT LOSS		AIR CHANGE HEAT LOSS		AIR CHANGE HEAT LOSS		AIR CHANGE HEAT LOSS	
AIR CHANGE HEAT GAIN	AIR CHANGE HEAT GAIN		AIR CHANGE HEAT GAIN		AIR CHANGE HEAT GAIN		AIR CHANGE HEAT GAIN		AIR CHANGE HEAT GAIN		AIR CHANGE HEAT GAIN		AIR CHANGE HEAT GAIN		AIR CHANGE HEAT GAIN		AIR CHANGE HEAT GAIN		AIR CHANGE HEAT GAIN	
DUCT LOSS	DUCT LOSS		DUCT LOSS		DUCT LOSS		DUCT LOSS		DUCT LOSS		DUCT LOSS		DUCT LOSS		DUCT LOSS		DUCT LOSS		DUCT LOSS	
DUCT GAIN	DUCT GAIN		DUCT GAIN		DUCT GAIN		DUCT GAIN		DUCT GAIN		DUCT GAIN		DUCT GAIN		DUCT GAIN		DUCT GAIN		DUCT GAIN	
HEAT GAIN PEOPLE	HEAT GAIN PEOPLE		HEAT GAIN PEOPLE		HEAT GAIN PEOPLE		HEAT GAIN PEOPLE		HEAT GAIN PEOPLE		HEAT GAIN PEOPLE		HEAT GAIN PEOPLE		HEAT GAIN PEOPLE		HEAT GAIN PEOPLE		HEAT GAIN PEOPLE	
HEAT GAIN APPLIANCES/LIGHTS	HEAT GAIN APPLIANCES/LIGHTS		HEAT GAIN APPLIANCES/LIGHTS		HEAT GAIN APPLIANCES/LIGHTS		HEAT GAIN APPLIANCES/LIGHTS		HEAT GAIN APPLIANCES/LIGHTS		HEAT GAIN APPLIANCES/LIGHTS		HEAT GAIN APPLIANCES/LIGHTS		HEAT GAIN APPLIANCES/LIGHTS		HEAT GAIN APPLIANCES/LIGHTS		HEAT GAIN APPLIANCES/LIGHTS	
TOTAL HT LOSS	TOTAL HT LOSS		TOTAL HT LOSS		TOTAL HT LOSS		TOTAL HT LOSS		TOTAL HT LOSS		TOTAL HT LOSS		TOTAL HT LOSS		TOTAL HT LOSS		TOTAL HT LOSS		TOTAL HT LOSS	
TOTAL HT GAIN	TOTAL HT GAIN		TOTAL HT GAIN		TOTAL HT GAIN		TOTAL HT GAIN		TOTAL HT GAIN		TOTAL HT GAIN		TOTAL HT GAIN		TOTAL HT GAIN		TOTAL HT GAIN		TOTAL HT GAIN	
TOTAL HT GAIN ± 1.5 BTU/H	TOTAL HT GAIN ± 1.5 BTU/H		TOTAL HT GAIN ± 1.5 BTU/H		TOTAL HT GAIN ± 1.5 BTU/H		TOTAL HT GAIN ± 1.5 BTU/H		TOTAL HT GAIN ± 1.5 BTU/H		TOTAL HT GAIN ± 1.5 BTU/H		TOTAL HT GAIN ± 1.5 BTU/H		TOTAL HT GAIN ± 1.5 BTU/H		TOTAL HT GAIN ± 1.5 BTU/H		TOTAL HT GAIN ± 1.5 BTU/H	

CITY OF RICHMOND HILL
BUILDING DIVISION

08/12/2021

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Per: _____

SITE NAME: CENTREFIELD (WEST GORMLEY)
BUILDER: ROYAL PINE HOMES

OPT. IN LAW

DATE: Jun-21

GFA: 3223 LO# 87513

TYPE: 4504

HEATING CFM 1370 COOLING CFM 1370
TOTAL HEAT LOSS 48,111 TOTAL HEAT GAIN 41,251
AIR FLOW RATE CFM 28.43 AIR FLOW RATE CFM 33.21

**CARRIER

59T6A-060-14V 60
FAN SPEED LOW 820
MEDLOW 0
MEDIUM 1370
HIGH 1520

AFUE = 97 %
INPUT (BTUH) = 80,000
OUTPUT (BTUH) = 58,000
DESIGN CFM = 1370
CFM @ 8" E.S.P.

ROOM NAME	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st	22nd	23rd	24th
RM LOSS MBH	1.55	0.92	0.92	1.55	1.87	1.47	0.58	2.26	1.87	1.55	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
CFM PER RUN HEAT	44	26	26	44	53	42	16	64	53	44	32	32	32	32	32	32	32	32	32	32	32	32	32	32
RM GAIN MBH	2.03	0.79	0.79	3.00	2.62	1.97	0.36	3.00	2.62	2.03	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
CFM PER RUN COOLING	67	26	26	100	87	65	12	100	87	67	54	54	54	54	54	54	54	54	54	54	54	54	54	54
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
EQUIVALENT LENGTH	140	150	160	120	160	170	170	140	150	140	170	170	170	170	170	170	170	170	170	170	170	170	170	170
ADJUSTED PRESSURE	0.09	0.08	0.08	0.09	0.07	0.07	0.07	0.08	0.07	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
ROUND DUCT SIZE	5	4	4	6	6	6	4	6	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
HEATING VELOCITY (ft/min)	323	298	298	326	270	214	184	326	270	323	235	235	235	235	235	235	235	235	235	235	235	235	235	235
COOLING VELOCITY (ft/min)	492	298	298	510	444	331	138	510	444	492	396	396	396	396	396	396	396	396	396	396	396	396	396	396
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10

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

All S/A ruts 5"x2" unless noted otherwise on layout.

ROOM NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
RM LOSS MBH	1.55	0.92	0.92	1.55	1.87	1.47	0.58	2.26	1.87	1.55	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
CFM PER RUN HEAT	44	26	26	44	53	42	16	64	53	44	32	32	32	32	32	32	32	32	32	32	32	32	32	32
RM GAIN MBH	2.03	0.79	0.79	3.00	2.62	1.97	0.36	3.00	2.62	2.03	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
CFM PER RUN COOLING	67	26	26	100	87	65	12	100	87	67	54	54	54	54	54	54	54	54	54	54	54	54	54	54
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
EQUIVALENT LENGTH	140	150	160	120	160	170	170	140	150	140	170	170	170	170	170	170	170	170	170	170	170	170	170	170
ADJUSTED PRESSURE	0.09	0.08	0.08	0.09	0.07	0.07	0.07	0.08	0.07	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
ROUND DUCT SIZE	5	4	4	6	6	6	4	6	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
HEATING VELOCITY (ft/min)	323	298	298	326	270	214	184	326	270	323	235	235	235	235	235	235	235	235	235	235	235	235	235	235
COOLING VELOCITY (ft/min)	492	298	298	510	444	331	138	510	444	492	396	396	396	396	396	396	396	396	396	396	396	396	396	396
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10

ROOM NAME	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
RM LOSS MBH	1.55	0.92	0.92	1.55	1.87	1.47	0.58	2.26	1.87	1.55	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
CFM PER RUN HEAT	44	26	26	44	53	42	16	64	53	44	32	32	32	32	32	32	32	32	32	32	32	32	32	32
RM GAIN MBH	2.03	0.79	0.79	3.00	2.62	1.97	0.36	3.00	2.62	2.03	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
CFM PER RUN COOLING	67	26	26	100	87	65	12	100	87	67	54	54	54	54	54	54	54	54	54	54	54	54	54	54
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
EQUIVALENT LENGTH	140	150	160	120	160	170	170	140	150	140	170	170	170	170	170	170	170	170	170	170	170	170	170	170
ADJUSTED PRESSURE	0.09	0.08	0.08	0.09	0.07	0.07	0.07	0.08	0.07	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
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HEATING VELOCITY (ft/min)	323	298	298	326	270	214	184	326	270	323	235	235	235	235	235	235	235	235	235	235	235	235	235	235
COOLING VELOCITY (ft/min)	492	298	298	510	444	331	138	510	444	492	396	396	396	396	396	396	396	396	396	396	396	396	396	396
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10

ROOM NAME	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
RM LOSS MBH	1.55	0.92	0.92	1.55	1.87	1.47	0.58	2.26	1.87	1.55	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
CFM PER RUN HEAT	44	26	26	44	53	42	16	64	53	44	32	32	32	32	32	32	32	32	32	32	32	32	32	32
RM GAIN MBH	2.03	0.79	0.79	3.00	2.62	1.97	0.36	3.00	2.62	2.03	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
CFM PER RUN COOLING	67	26	26	100	87	65	12	100	87	67	54	54	54	54	54	54	54	54	54	54	54	54	54	54
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
EQUIVALENT LENGTH	140	150	160	120	160	170	170	140	150	140	170	170	170	170	170	170	170	170	170	170	170	170	170	170
ADJUSTED PRESSURE	0.09	0.08	0.08	0.09	0.07	0.07	0.07	0.08	0.07	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
ROUND DUCT SIZE	5	4	4	6	6	6	4	6	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
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OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10

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.

MICHAEL O'ROURKE

INDIVIDUAL BCIN: 19669

Michael O'Rourke

CITY OF RICHMOND HILL
BUILDING DIVISION
08/12/2021
RECEIVED
Per: _____

TYPE: 4504
SITE NAME: CENTREFIELD (WEST GORMLEY)

LO # 87513
OPT. IN LAW

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	4	@ 10.6 cfm	42.4	cfm
Kitchen & Bathrooms	6	@ 10.6 cfm	63.6	cfm
Other Rooms	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.			TOTAL	212.0 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	212	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	116.6	cfm

PRINCIPAL EXHAUST FAN CAPACITY
Model: VANE 65H Location: BSMT
95.4 cfm ☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM	ΔT °F	FACTOR	% LOSS
95.4 CFM	78 F	1.08	0.25

SUPPLEMENTAL FANS BY INSTALLING CONTRACTOR

Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	✓	3.5
BATH	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-2	BY INSTALLING CONTRACTOR	50	✓	3.5
W/R	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.
Model: VANE 65H
155 cfm high 64 cfm low
75 % Sensible Efficiency @ 32 deg F (0 deg C) ☒ HVI Approved

LOCATION OF INSTALLATION
Lot: Concession
Township: Plan:
Address:
Roll # Building Permit #

BUILDER: ROYAL PINE 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: *Michael O'Rourke*
HRAI #: 001820
Date: 08/12/2021 June-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

RECEIVED
Per:

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																															
Formula Sheet (For Air Leakage / Ventilation Calculation)		Date: 6/7/2021																																																													
LO#: 87513 Model: 4504		Builder: ROYAL PINE HOMES																																																													
Volume Calculation		Air Change & Delta T Data																																																													
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> <tr> <td>Bsmt</td> <td>1453</td> <td>9</td> <td>13077</td> </tr> <tr> <td>First</td> <td>1453</td> <td>10</td> <td>14530</td> </tr> <tr> <td>Second</td> <td>1770</td> <td>8</td> <td>14160</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="2" style="text-align: right;">Total:</td> <td></td> <td>41,767.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>1182.7 m³</td> </tr> </table>		Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1453	9	13077	First	1453	10	14530	Second	1770	8	14160	Third	0	9	0	Fourth	0	9	0	Total:			41,767.0 ft³	Total:			1182.7 m³	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="4" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>T_{in} °C</th> <th>T_{out} °C</th> <th>ΔT °C</th> </tr> <tr> <td>Winter DTDh</td> <td>22</td> <td>-21</td> <td>43</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>31</td> <td>7</td> </tr> <tr> <td></td> <td></td> <td></td> <td>ΔT °F</td> </tr> <tr> <td></td> <td></td> <td></td> <td>78</td> </tr> <tr> <td></td> <td></td> <td></td> <td>13</td> </tr> </table>		Design Temperature Difference					T _{in} °C	T _{out} °C	ΔT °C	Winter DTDh	22	-21	43	Summer DTDc	24	31	7				ΔT °F				78				13
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5.2.3.1 Heat Loss due to Air Leakage		6.2.6 Sensible Gain due to Air Leakage																																																													
$HL_{airb} = LR_{airb} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$		$HG_{sdlb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$																																																													
0.219	x 328.53	x 43 °C	x 1.2																																																												
= 3727 W		= 191 W																																																													
= 12718 Btu/h		= 652 Btu/h																																																													
5.2.3.2 Heat Loss due to Mechanical Ventilation		6.2.7 Sensible heat Gain due to Ventilation																																																													
$HL_{airbv} = PVC \times DTD_h \times 1.08 \times (1 - E)$		$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																													
95 CFM	x 78 °F	x 1.08	x 0.25																																																												
= 2004 Btu/h		= 330 Btu/h																																																													
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																															
$HL_{airr} = Level Factor \times HL_{airbv} \times \{(HL_{ager} + HL_{bgr}) + (HL_{agcleve} + HL_{bgcleve})\}$																																																															
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4	0		0	0.000																																																											
5	0		0	0.000																																																											

*HL_{airbv} = Air leakage heat loss + ventilation heat loss
 *For a balanced or supply only ventilation system HL_{airbv} = 0

CITY OF RICHMOND HILL
BUILDING DIVISION

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4504	OPT. IN LAW	BUILDER: ROYAL PINE HOMES
SFQT: 3223	LO# 87513	SITE: CENTREFIELD (WEST GORMLEY)

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:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	41767.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.40	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 46.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	166.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component**

Ceiling with Attic Space Minimum RSI (R)-Value
Ceiling Without Attic Space Minimum RSI (R)-Value
Exposed Floor Minimum RSI (R)-Value
Walls Above Grade Minimum RSI (R)-Value
Basement Walls Minimum RSI (R)-Value
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
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value
Windows and Sliding Glass Doors Maximum U-Value
Skylights Maximum U-Value
Space Heating Equipment Minimum AFUE
HRV Minimum Efficiency
Domestic Hot Water Heater Minimum EF

**CITY OF RICHMOND HILL
BUILDING DIVISION****08/12/2021****RECEIVED**

Per: _____

**Compliance Package
SB-12 PERFORMANCE**

Nominal	Min. Eff.
60	59.20
31	27.70
31	29.80
22+1.5	18.50
20	21.12
-	-
10	10
10	11.13
1.6	-
2.6	-
0.96	-
75%	-
TE=94%	-

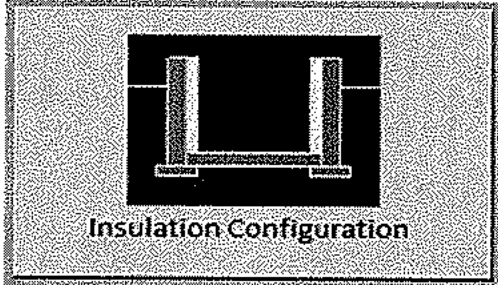
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

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):	14.0	 Insulation Configuration
Floor Width (m):	11.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.9	
Door Area (m ²):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	<div>CITY OF RICHMOND HILL BUILDING DIVISION 08/12/2021 RECEIVED Per: _____</div>
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	1638	

TYPE: 4504
LO# 87513

OPT. IN LAW

08/12/2021

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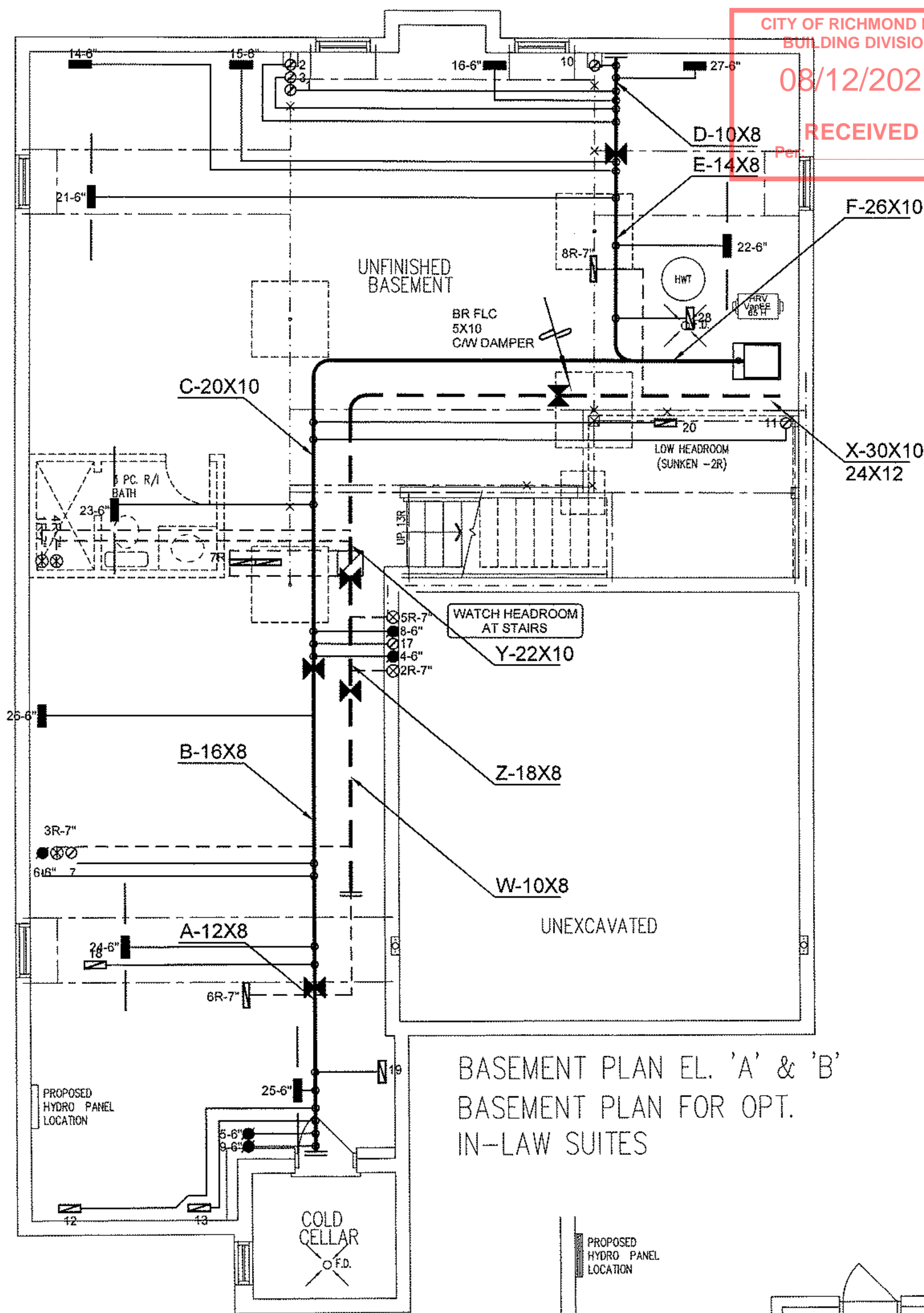
Per: _____

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):	6.40		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	1182.7		
Air Leakage/Ventilation			
Air Tightness Type:	Energy Star Detached (2.5 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1104.1 cm ²	
	2.50	ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust	
	45.0	45.0	
Flue Size			
Flue #:	#1	#2	#3
Diameter (mm):	0	0	0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.219		
Cooling Air Leakage Rate (ACH/H):	0.068		

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BASEMENT PLAN EL. 'A' & 'B'
BASEMENT PLAN FOR OPT.
IN-LAW SUITES

BASEMENT PLAN EL. 'C'

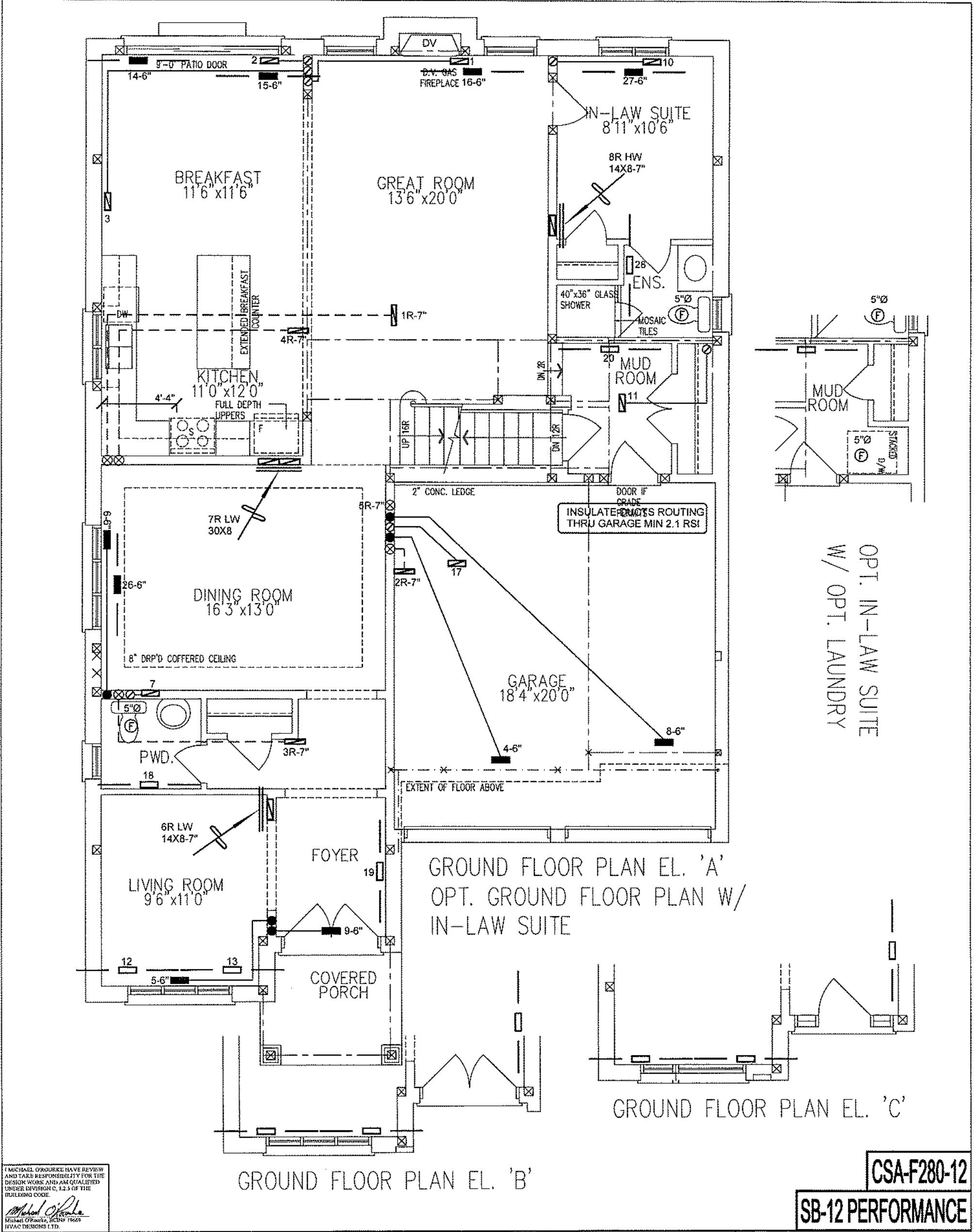
CSA-F280-12
SB-12 PERFORMANCE

I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.32.5 OF THE BUILDING CODE.
Michael O'Rourke, UCBV 19669
HVAC DESIGNS LTD.

HVAC LEGEND								3.	REVISED AS PER CAD	JUNE/2021
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		









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Client ROYAL PINE HOMES		<div>HVACDESIGNS LTD.</div> <p>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</p> <p>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.</p>	HEAT LOSS 50115 BTU/H		# OF RUNS S/A R/A FANS		Sheet Title BASEMENT HEATING LAYOUT
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			UNIT DATA		3RD FLOOR		
			MAKE CARRIER		2ND FLOOR 12 5 5		
			MODEL 59TN6A-060-14V		1ST FLOOR 11 3 3(4)		
			INPUT 60 MBTU/H		BASEMENT 5 1 0		
OPT. IN LAW 4504 3223 sqft		OUTPUT 58 MBTU/H		ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A		Date SEPT/2020	
		COOLING 3.5 TONS				Scale 3/16" = 1'-0"	
		FAN SPEED 1370 cfm @ 0.6" w.c.				BCIN# 19669	
						LO# 87513	




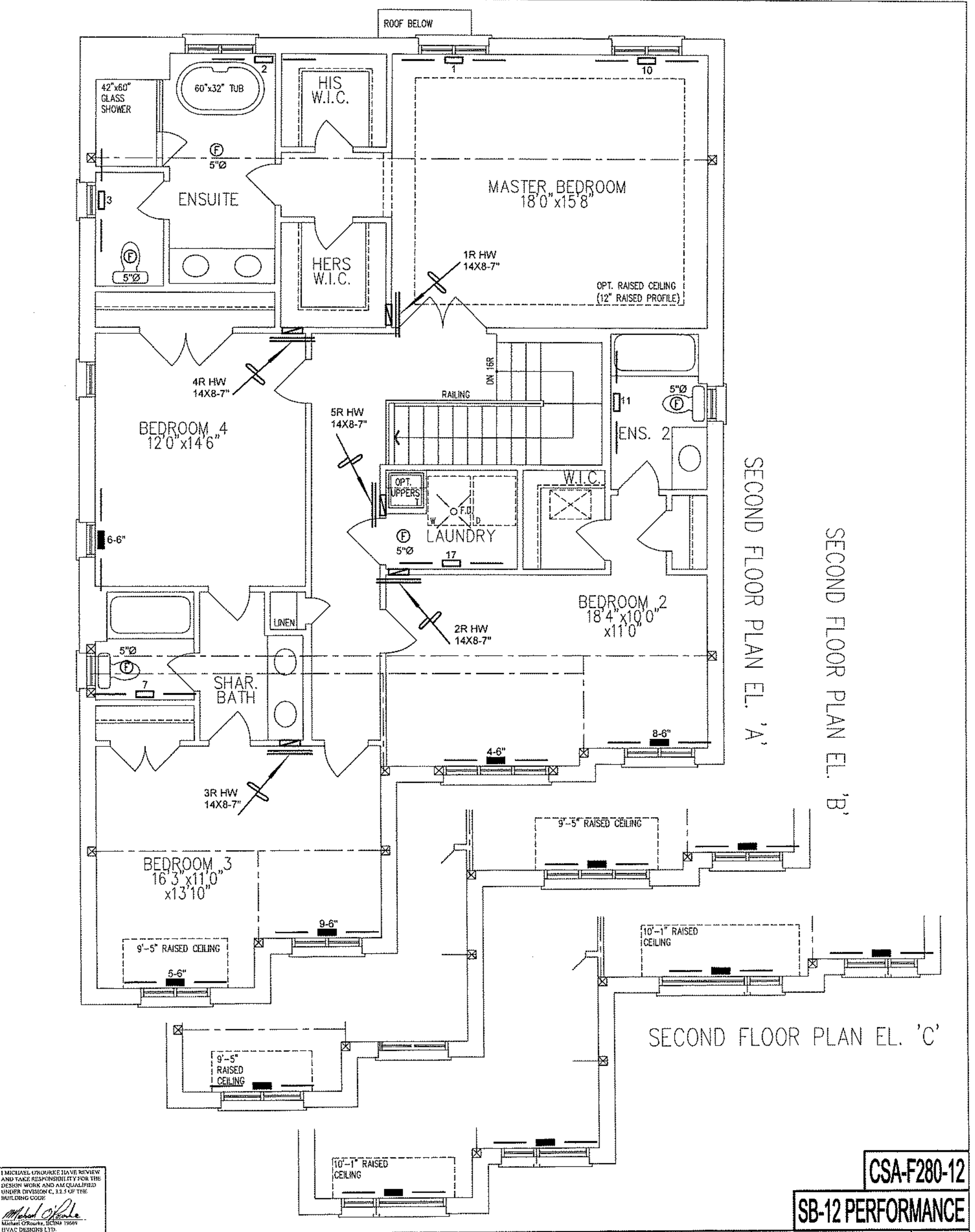
I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 12.3 OF THE BUILDING CODE.

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

HVAC LEGEND								3.	REVISED AS PER CAD	JUNE/2021
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

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Client ROYAL PINE HOMES		 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	<div>CITY OF RICHMOND HILL BUILDING DIVISION 08/12/2021 RECEIVED Per: _____</div>	Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO				Date SEPT/2020	Scale 3/16" = 1'-0"
OPT. IN LAW 4504 3223 sqft		BCIN# 19669 LO# 87513			
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.					



I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 32.5 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, LIC# 19669
HVAC DESIGNS LTD.

CSA-F280-12

SB-12 PERFORMANCE

HVAC LEGEND								3.	REVISED AS PER CAD	JUNE/2021
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
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Client

ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY)

RICHMOND HILL, ONTARIO

OPT. IN LAW

4504

3223 sqft

HVAC DESIGNS LTD.

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L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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BUILDING DIVISION

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Per: _____

Sheet Title

SECOND FLOOR

HEATING

LAYOUT

Date

SEPT/2020

Scale

3/16" = 1'-0"

BCIN# 19669

LO#

87513